

FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION:

Vernal Pool Restoration at Beale Air Force Base (AFB), California

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Proposed Action. The Proposed Action consists of vernal pool restoration projects at "Site 2" and "Site 3" at Beale AFB. The vernal pool restoration projects fulfill compensation requirements for past and future impacts to vernal pools that are habitat for federally threatened and endangered species.

No Action Alternative. Under the No Action Alternative, Beale AFB would not be able to meet regulatory compensation requirements. The U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers require compensation for vernal pool impacts to involve both a restoration/creation component and a preservation component.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES:

The scoping process in this Supplemental Environmental Assessment (EA) focused the analysis on the following environmental resources: Air Quality, Biological Resources, Water Resources, Soils and Geological Resources, and Safety. Details of the original environmental consequences can be found in the EA Wing Infrastructure Development Outlook (WINDO) Implementation Plan Vol. 2, which is hereby incorporated as Appendix A.

The original Draft EA WINDO Implementation Plan Vol. 2 was made available for a 30-day public comment period 16 August 2005. A Notice of Availability was published in the local newspaper, the Marysville Appeal-Democrat. The Draft Supplemental EA for the Vernal Pool Restoration Project in the WINDO Implementation Plan EA, Vol. 2 was made available to the public for a 30-day public comment period. A Notice of Availability was published in the local newspaper, the Marysville Appeal Democrat, and copies of the Draft EA were sent to interested stakeholders, such as regulatory agencies and the Yuba County Planning Department.

CONCLUSION:

Finding of No Significant Impact. Based on the information and analysis presented in the Supplemental EA, which was conducted in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations, and implementing regulations set forth in 32 CFR 989 (Environmental Impact Analysis Process), as amended, and review of the public and agency comments submitted during the 30-day public comment period, I conclude that implementation of the proposed action would not result in significant impacts to the quality of the human or natural environment. For these reasons, a finding of no significant impact is made and preparation of an Environmental Impact Statement (EIS) is not warranted.


ROBERT A. YAHN, JR., Colonel, USAF
Vice Commander, 9th Reconnaissance Wing


Date

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE SEP 2010		2. REPORT TYPE		3. DATES COVERED 00-00-2010 to 00-00-2010	
4. TITLE AND SUBTITLE Supplemental Environmental Assessment (EA) for the Vernal Pool Restoration Project in Wing Infrastructure Development Outlook (WINDO) Implementation Plan EA, Volume 2 Beale Air Force Base, California			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 9th Civil Engineer Squadron (CES/CEVA),Environmental Flight,6601 B Street,Beale AFB,CA,95903			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 74	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

**SUPPLEMENTAL
ENVIRONMENTAL ASSESSMENT (EA)
FOR THE VERNAL POOL RESTORATION PROJECT
IN THE
WING INFRASTRUCTURE DEVELOPMENT OUTLOOK
(WINDO) IMPLEMENTATION PLAN EA,
VOLUME 2
BEALE AIR FORCE BASE, CALIFORNIA
SEPTEMBER 2010**

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Acronyms and Abbreviations

AFB.....	Air Force Base
AQCR.....	Air Quality Control Region
BASH.....	Bird Air Strike Hazard
BHWG.....	Bird Hazard Working Group
CAA.....	Clean Air Act
CAAQS.....	California Ambient Air Quality Standards
CARB.....	California Air Resources Board
CEQ.....	Council on Environmental Quality
CFR.....	Code of Federal Regulations
CNDDB.....	California Natural Diversity Database
CO.....	Carbon Monoxide
CRLF.....	California Red-Legged Frog
EA.....	Environmental Assessment
EIS.....	Environmental Impact Statement
ERP.....	Environmental Restoration Program
ESA.....	Endangered Species Act
FRAQMD.....	Feather River Air Quality Management District
FONSI.....	Finding of No Significant Impact
FONPA.....	Finding of No Practicable Alternative
GHG.....	Greenhouse Gas
HAP.....	Hazardous Air Pollutant
MMRP.....	Military Munitions Response Program
MBTA.....	Migratory Bird Treaty Act
NAAQS.....	National Ambient Air Quality Standards
NEPA.....	National Environmental Policy Act
NO_x	Nitrogen Oxides

NO₂ Nitrogen Dioxide
O₃.....Ozone
OPLAN.....Operational Plan
OPR.....Office of Primary Responsibility
Pb.....Lead
PM_{2.5}..... Particulate Matter Equal to or Less Than 2.5 Microns in Diameter
PM₁₀..... Particulate Matter Equal to or Less Than 10 Microns in Diameter
PSD.....Prevention of Significant Deterioration
SMAQMD.....Sacramento Metropolitan Air Quality Management District
SIP.....State Implementation Plan
SVI.....Sacramento Valley Intrastate
SO_xSulfur Oxides
SO₂Sulfur Dioxide
tpyTons Per Year
TSP.....Total Suspended Particulate
URBEMIS..... Urban Emissions Model
USEPA.....United States Environmental Protection Agency
USFWS.....United States Fish and Wildlife Service
VELB.....Valley Elderberry Longhorn Beetle
VOCs..... Volatile Organic Compounds
WINDO.....Wing Infrastructure Development Outlook

1.0 Purpose and Need

1.1 Purpose and Need for Supplemental Environmental Assessment

In 2005, an Environmental Assessment (EA) was prepared to assess the potential environmental impacts of a series of projects. This EA was titled *Wing Infrastructure Development Outlook (WINDO) Implementation Plan at Beale Air Force Base, California* (Appendix A), and addressed numerous proposed projects that were scheduled to occur at Beale Air Force Base. The EA consisted of two volumes: Volume 1 described projects that were not expected to have environmental impacts, and Volume 2 discussed twelve projects that were more likely to have impacts. A Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA) for the original WINDO Volume 2 EA was signed in October 2005 (Appendix B). Most of the projects that were described in Volume 2 of the WINDO EA have been completed, but a vernal pool restoration project is still in progress. This supplemental EA has been prepared to address subsequent phases of the vernal pool restoration project, which was one of the twelve projects discussed in the EA. This supplemental EA was released for a 30-day public comment period in August 2010 (Appendix C).

1.2 Purpose and Need for Proposed Action

The original EA entitled *Wing Infrastructure Development Outlook (WINDO) Implementation Plan at Beale Air Force Base, California, Volume 2*, located at Appendix A, addressed a vernal pool restoration project designed to restore and compensate for natural vernal pools on Beale Air Force Base (AFB). The first phases of the vernal pool restoration project, which restored vernal pools at restoration Site 1, were completed in 2005. This supplemental Environmental Assessment addresses subsequent phases of the vernal pool restoration project, which will create, restore, and/or enhance vernal pools at restoration Sites 2 and 3. The Purpose and Need for this project as described in Chapter 1.0 of the original EA has not changed and does not require supplemental information.

1.3 Organization of this Supplemental Environmental Assessment

This supplemental EA is intended to be used in conjunction with the EA entitled *Wing Infrastructure Development Outlook (WINDO) Implementation Plan, Volume 2, Beale Air Force Base, California*. Chapter 1.0 presents the purpose and need. Chapter 2.0 provides a Description of the Proposed Action and Alternatives. Chapter 3.0 presents the affected environment. This supplemental EA includes primarily updated information regarding environmental consequences of the Proposed Action, specific to the future phases of the Vernal Pool Restoration Project. The results of the environmental analysis are presented in Chapter 4.0. Chapter 5 contains a summary of cumulative and adverse impacts. Chapter 6.0 lists preparers and reviewers involved in the preparation of the supplemental EA; and Chapter 7.0 contains references.

2.0 Description of Proposed Action and Alternatives

The Proposed Vernal Pool Restoration Project at Beale Air Force Base involves several phases of vernal pool restoration in three different locations (Figure 1). The original WINDO 2 EA (Appendix C) provides a description and analysis of the Vernal Pool Restoration Project, which involves restoration of vernal pools on Beale Air Force Base at three vernal pool restoration sites. This supplemental EA provides a description and analysis for those phases of the project that are not yet completed, which would involve restoration of vernal pools at Site 2 in the southern portion of the base and at Site 3 in the northern portion of the Base. Future phases of the Vernal Pool Restoration Project will be as described in Chapter 2.0 of the Original EA.

The remaining phases of the restoration project would restore approximately 13 acres of vernal pools at the 83-acre Vernal Pool Creation/Enhancement Site 2, located in the southern portion of the base near the Wheatland Gate (Figure 2). The Proposed Action would also create 2 acres of vernal pools at Site 3, located in the northern portion of the base, near the Munitions Range Area (Figure 3). The constructed vernal pools will consist of shallow depressions with an average depth of 10 inches and an average size of 0.2-0.3 acre. The pools will be hydrologically connected on the surface with adjacent pools by vernal swales that will also be constructed as part of the project. Spoil material from the vernal pool excavations will be deposited adjacent to the pools in such a way that allows the creation of uplands.

Implementation of the proposed action would itself result in direct impacts to up to 9.5 acres of wetlands during implementation of this project. The USFWS requires compensation for vernal pool impacts to involve both a restoration/creation component and a preservation component. Sampling for protected vernal pool crustaceans was conducted at Sites 2 and 3. Site 3 was sampled in 2008 during both wet and dry seasons and no listed invertebrates were found (EDAW 2009). Site 2 was sampled for special-status shrimp species in 2005 (by AMEC subbed to Foothill Assoc). During the dry season, cysts of vernal pool fairy shrimp were found in 4 pools, and there were 2 more pools that were hydrologically connected to these. Project designs were modified in coordination with the USFWS to avoid these 6 pools in order to avoid impacts to the species. No listed shrimp were found during the wet season. Vernal pools with listed invertebrates were specifically chosen for inoculum collection, as the goal is to collect and spread their cysts into the newly created pools. At Site 2 the project will have direct impacts to non-vernal pool wetlands that are remnants of an abandoned rice field.

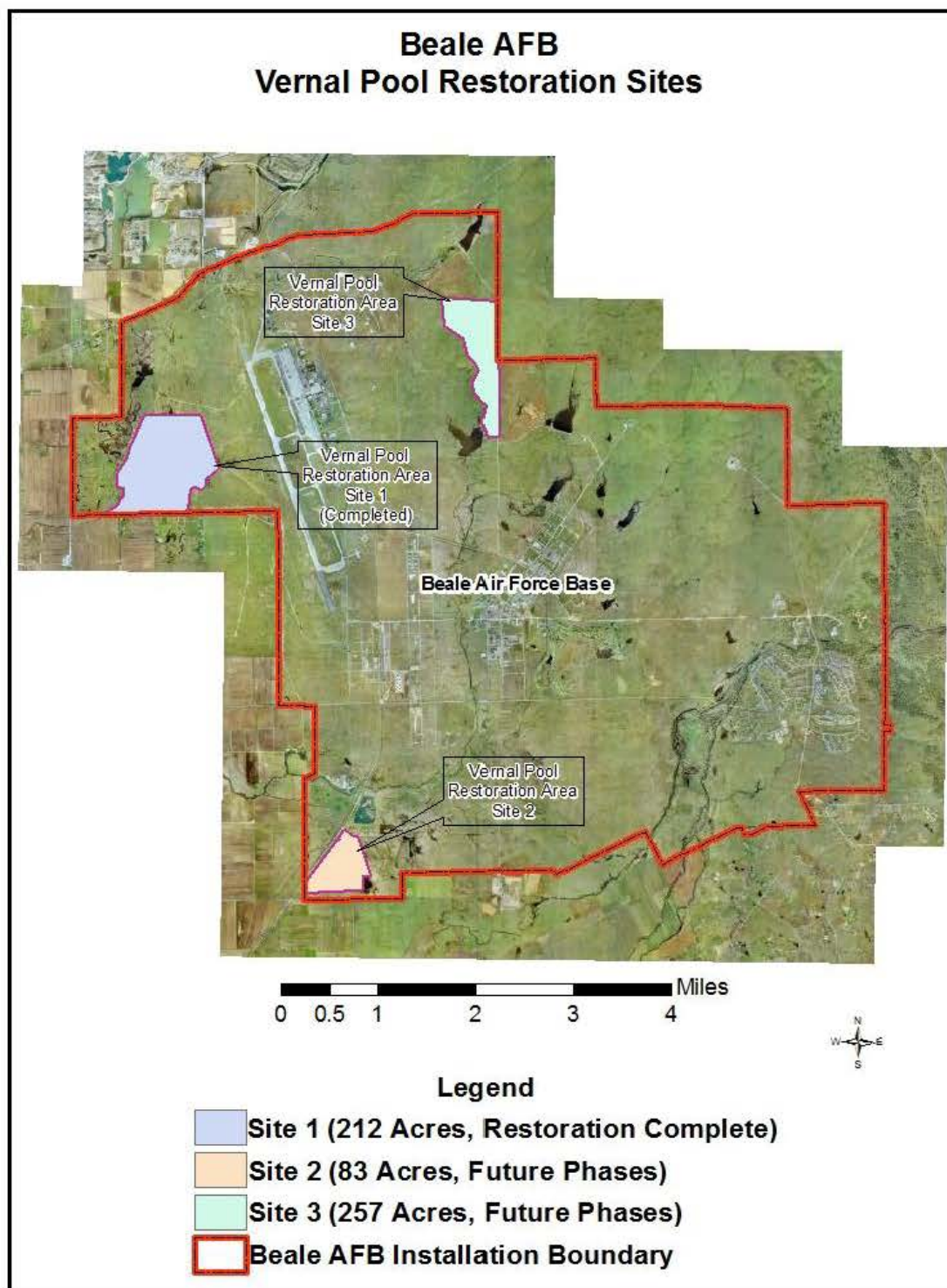
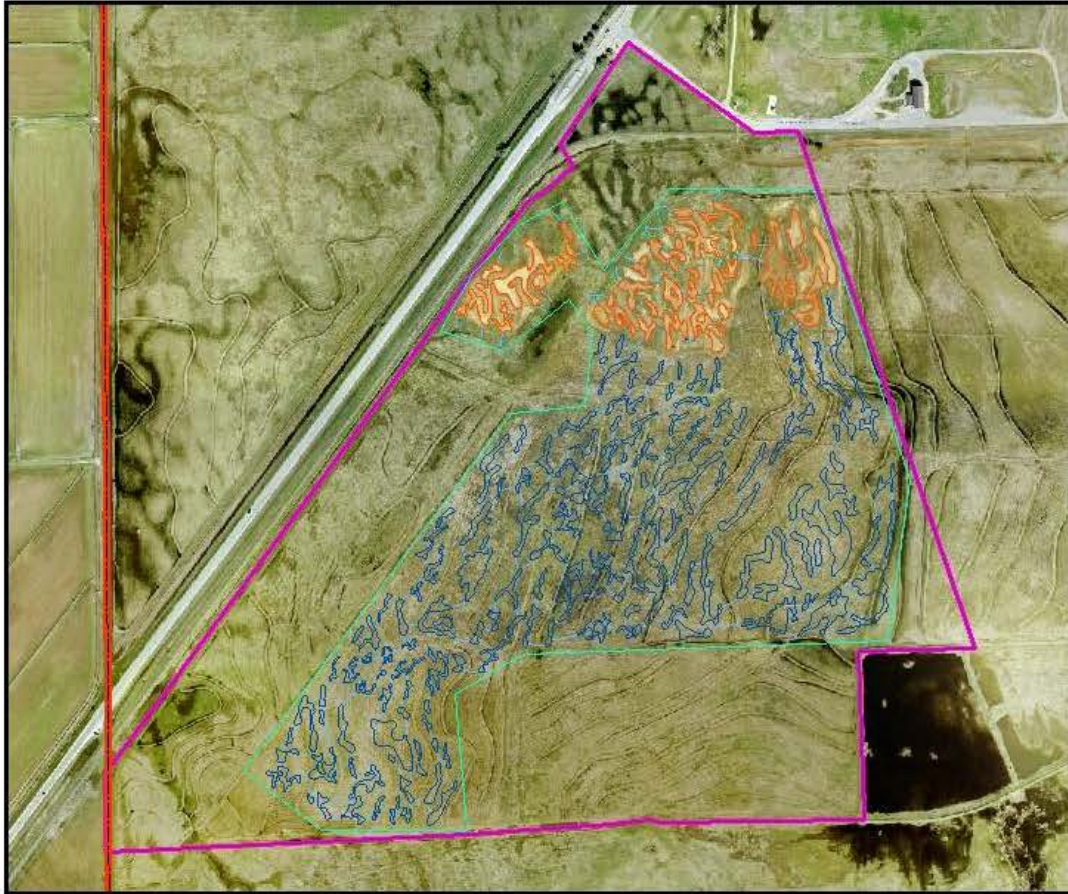


Figure 1. Vernal Pool Restoration Project - Restoration Site Locations

Vernal Pool Restoration Project Site 2



**Beale Air Force Base
Yuba County, CA**

Legend

-  Created Pools (39 Pools, 1.94 Acres)
-  Proposed Pools (161 pools/12.68 Acres)
-  Proposed Swales
-  Site 2 Boundary
-  Site 2 VP Restoration Boundary
-  Beale AFB Installation Boundary



0 250 500 1,000 1,500 Feet

Prepared by: DC

Figure 2. Vernal Pool Restoration Project - Restoration Site 2

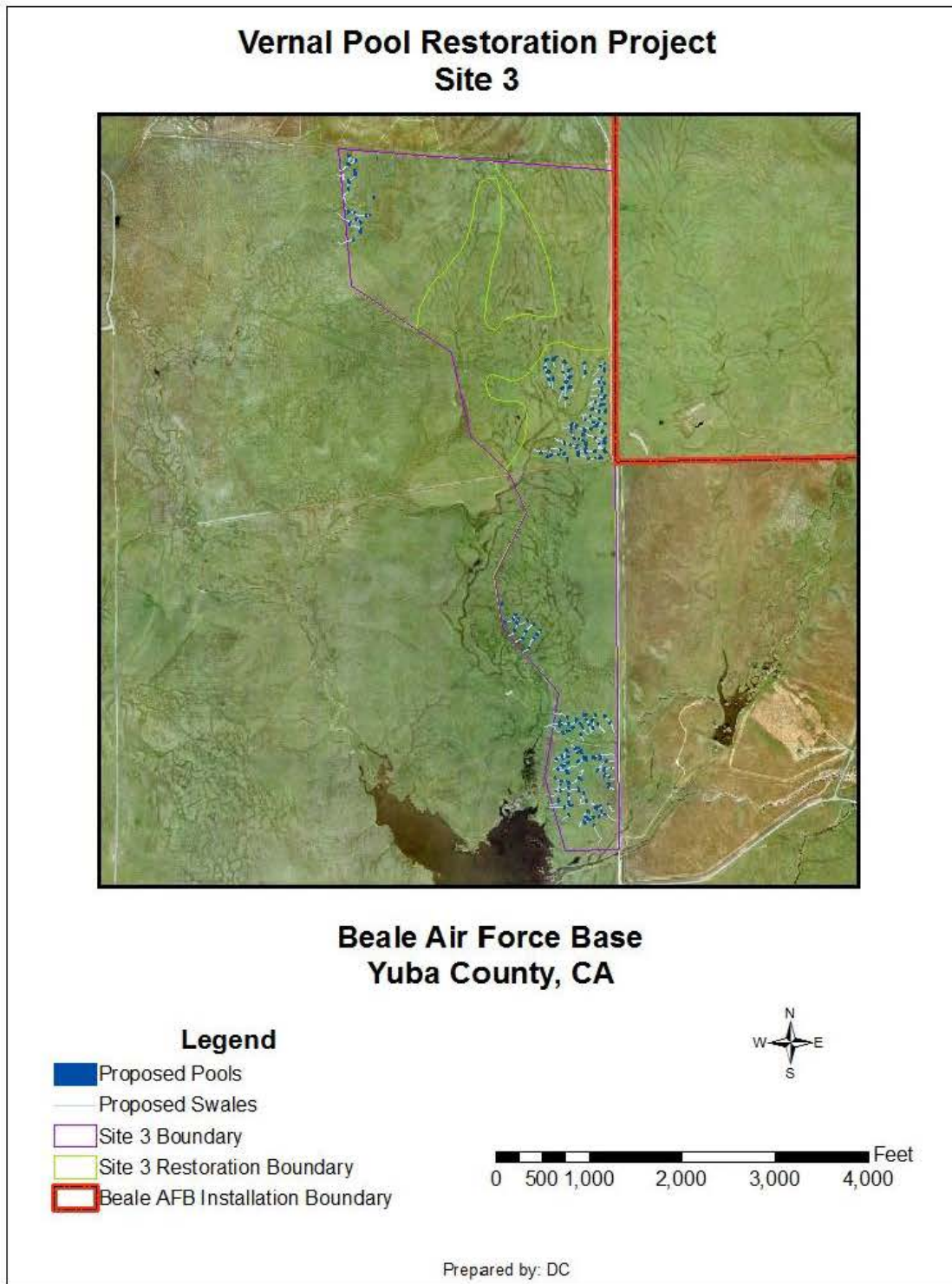


Figure 3. Vernal Pool Restoration Project - Restoration Site 3

3.0 Affected Environment

Chapter 3.0 of the original EA provides a description of the affected environment at Beale Air Force Base. Supplemental information about the affected environment is provided in this section. Supplemental information about the potential environmental impacts of the Proposed Action and No Action Alternative are described in Section 4.0.

Resources Eliminated From Further Detailed Analysis

In the Original EA, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. Some environmental resources and conditions were omitted from further detailed analysis. A description of those resources and the reasons for their omission from detailed analysis is provided in Section 3.0 of the original EA, starting on page 12. Additional information is provided here regarding other resources and conditions that were considered but are not subject to impacts from the Proposed Action as described in this supplemental EA. The following details the basis for such exclusions:

- ***Aesthetics.*** Resources at Beale AFB with aesthetic value include scenic resources such as scenic vistas, historic buildings, trees, rock outcroppings, and day or nighttime views. Scenic resources in the vicinity of the Proposed Action include trees and riparian areas. No scenic vistas or scenic resources are located in or near the project area. Aesthetics will not be impacted by the proposed action.
- ***Agricultural Resources.*** Prime locations of agricultural land in California are determined by soil quality and irrigation status, which make particular locations attractive for agricultural operations. Feasibility of agricultural operations is generally based on climate and quality of the soils in the area together with the economic infrastructure that makes farming possible. The land use constraints at Beale AFB are generally not conducive to agricultural production. There is no prime or unique farmland or farmland of statewide importance at Beale AFB. Agricultural resources will not be adversely impacted by the Proposed Action.
- ***Cultural Resources.*** Cultural resources consist of prehistoric and historic artifactual material, archeological sites, districts, structures, or any other physical evidence of previous human activities that are part of the current landscape. A cultural resources survey (Dames and Moore, 1994) has been conducted in the project areas. No cultural resources were discovered within the boundaries of Site 2. One pre-military archeological site was discovered in the vicinity of Site 3 (BAFB 2008b), but this archeological site was ineligible for listing with the National Register of Historic Places (Title 36 CFR 60). Cultural Resources will not be impacted by the next phases of the vernal pool restoration project.
- ***Recreation.*** Recreation resources at Beale AFB include a recreation facility (the Harris Fitness center), walking trails, designated hunting and fishing areas, and other open spaces. The Proposed Action does not involve construction or expansion of recreational facilities, would not impact existing recreation facilities and would not impact recreation activities. Recreation at Beale AFB would not be impacted by the Proposed Action.

- **Mineral Resources.** Mineral resources include metals, industrial minerals (e.g., aggregate, sand and gravel), oil and gas, and geothermal resources that would be of value. There are no known mineral resources on Beale AFB. Mineral resources will not be impacted.
- **Utilities and Infrastructure.** Utilities and infrastructure at Beale AFB include electrical transmission lines, communication lines, emergency generators, a storm-water drainage system, a drinking water treatment plant and a wastewater treatment plant. The Proposed Action would result in a temporary increase in the use of infrastructure, utilities and service systems; however, impacts on infrastructure and utilities from the Proposed Action would be negligible to minor, compared to the existing demand. Implementation of the Proposed Action would not require construction of new service facilities. Therefore, utilities and infrastructure will not be adversely impacted by the Proposed Action.
- **Population/Housing.** The Proposed Action would not directly or indirectly induce substantial population growth in the area, and would not displace people or necessitate replacement of existing housing.
- **Public Services.** The Proposed Action would have no impact on governmental services and would not create a need for new governmental facilities.
- **Land Use and Planning.** The Proposed Action would not conflict with land use objectives at Beale Air Force Base. Implementation of the Vernal Pool Restoration Project conforms to the Beale Air Force Base General Plan and is a necessary component of Beale's Habitat Conservation and Management Plan (BAFB 2002).
- **Noise.** Implementation of the Proposed Action does not involve permanent alterations to aircraft inventories, operations, or missions. No new permanent ground-based heavy equipment operations are included in the Proposed Action. No activity included in the Proposed Action would result in a situation where residences would be impacted by an increase to present ambient noise levels. Furthermore, noise produced by construction and demolition activities associated with the Proposed Action would not significantly affect sensitive receptors. The Proposed Action will not create noise impacts to off-base residents.
- **Hazardous Materials and Hazardous Waste Management.** The Proposed Action will not use hazardous materials or generate hazardous waste, with the exception of fuel for the construction equipment. The construction contractor would follow applicable regulations for proper hazardous materials management and disposal of hazardous waste. Any pesticide or herbicide use during plantings will be conducted in accordance with label instructions and by a licensed applicator. Additionally, no Environmental Restoration Program (ERP) sites are contained within the boundaries of the restoration sites. Impacts to hazardous materials and hazardous waste management are not expected and were omitted from further analysis.
- **Transportation.** No roads would be constructed or modified due to the Proposed Action, no influx of people would occur, and no effects to transportation networks are expected. Movement of construction equipment both inside and outside the project area will be of short duration and will have minimal effect to existing on- and off-base road systems. Because of the lack of impacts, transportation resources were eliminated from further analysis.

3.1 Air Quality

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

Under the CAA, the U.S. Environmental Protection Agency (USEPA) developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to affect human health and the environment. The NAAQS represent the maximum allowable concentrations for ozone (O₃) - measured as either volatile organic compounds (VOCs) or total nitrogen oxides (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM₁₀] and particulate matter equal to or less than 2.5 microns in diameter [PM_{2.5}]), and lead (Pb) (40 CFR Part 50). The CAA also gives the authority to states to establish air quality rules and regulations. The State of California has adopted the NAAQS and promulgated additional California Ambient Air Quality Standards (CAAQS) for criteria pollutants. The CAAQS are more stringent than the Federal primary standards. Table 3-1 presents the current USEPA NAAQS and CAAQS.

USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area was previously designated nonattainment but is now attainment; and an unclassified air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment. USEPA has delegated the authority for ensuring compliance with the NAAQS to the California Air Resources Board (CARB). CARB has delegated responsibility for implementation of the Federal CAA and California CAA to local air pollution control agencies. In accordance with the CAA, each state must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS.

The General Conformity Rule requires Federal actions meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS. The General Conformity Rule applies only to regionally significant actions in nonattainment or maintenance areas.

Table 3-1. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Standard Value		Federal Standard Type
		Federal	State	
CO	8-hour ^a	9 ppm (10 mg/m ³)	Same	Primary
	1-hour ^a	35 ppm (40 mg/m ³)	20 ppm (23 mg/m ³)	Primary
NO ₂	Annual Arithmetic Mean	0.053 ppm (100 µg/m ³)	0.030 ppm (57 µg/m ³)	Primary and Secondary
	1-hour	--	0.18 ppm (339 µg/m ³)	None
O ₃	8-hour ^b	0.075 ppm (147 µg/m ³)	0.070 ppm (137 µg/m ³)	Primary and Secondary
	1-hour ^c	--	0.09 ppm (180 µg/m ³)	Primary and Secondary
Pb	Quarterly average	1.5 µg/m ³	--	Primary and Secondary
	30-Day	--	1.5 µg/m ³	None
PM ₁₀	Annual Arithmetic Mean	--	20 µg/m ³	None
	24-hour	150 µg/m ³ ^d	50 µg/m ³	Primary and Secondary
PM _{2.5}	Annual Arithmetic Mean ^e	15 µg/m ³	12 µg/m ³	Primary and Secondary
	24-hour ^f	35 µg/m ³	Same	Primary and Secondary
SO ₂	Annual Arithmetic Mean	0.030 ppm	--	Primary
	24-hour ^a	0.14 ppm	0.04 ppm	Primary
	3-hour ^a	0.5 ppm (1,300 µg/m ³)	--	Secondary
	1-hour	--	0.25 ppm	None
Visibility Reducing Particles	8-hour	0.23 per km ^g	--	None
Sulfates	24-hour	25 µg/m ³	--	None
Hydrogen Sulfide	1-hour	0.03 ppm	--	None
Vinyl Chloride	24-hour	0.01 ppm	--	None

Sources: USEPA 2008 and CARB 2008

Notes: Parenthetical values are approximate equivalent concentrations.

- a. Not to be exceeded more than once per year.
- b. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. This standard is effective on May 27, 2008, and replaces the 1997 8-hour ozone standard of 0.08 ppm. However, the 1997 standard and its implementing rules remain in effect while USEPA undergoes rulemaking to transition to the 2008 standard.
- c. As of June 15, 2005, USEPA revoked the Federal 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.
- d. Not to be exceeded more than once per year on average over 3 years.
- e. To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
- f. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³. This standard is effective December 17, 2006.
- g. Extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is < 70%.

Key: ppm = parts per million; mg/m³ = milligrams per cubic meter; µg/m³ = micrograms per cubic meter; km = kilometer

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be “significant” if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 µg/m³ or more (40 CFR 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also define ambient air increments, limiting the allowable increases to any area’s baseline air contaminant concentrations, based on the area’s Class designation (40 CFR 52.21[c]). According to 40 CFR Part 81, no Class I areas are located in the vicinity of Beale AFB. Therefore, Federal PSD regulations would not apply to the Proposed Action (USEPA 2009b).

On September 22, 2009, the USEPA issued a final rule for mandatory greenhouse gas (GHG) reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO₂) and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO₂ equivalent per year. The first emissions report is due in 2011 for 2010 emissions. Although GHGs are not currently regulated under the CAA, the USEPA has clearly indicated that GHG emissions and climate change are issues that need to be considered in future planning. GHGs are produced by the burning of fossil fuels and through industrial and biological processes.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality. Section 112 of the CAA defines the sources and kinds of HAPs.

Beale AFB is in Yuba County, which is within the Sacramento Valley Intrastate (SVI) AQCR. The Proposed Action is in the Feather River Air Quality Management District (FRAQMD) and is subject to rules and regulations developed by the FRAQMD. The FRAQMD is responsible for

implementing and enforcing state and Federal air quality regulations in Yuba County, Sutter County, and portions of the Northern Sacramento Valley Air Basin. The air quality in Yuba County has been characterized by the USEPA as unclassified/attainment for all criteria pollutants (USEPA 2009a). However, CARB has designated Yuba county as a nonattainment-transitional area for 8-hour O₃ and nonattainment PM₁₀ (CARB 2010).

3.2 Biological Resources

As described in the original EA, biological resources include native or naturalized plants and animals and the habitats (i.e., wetlands, forests, and grasslands) in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS). Since the list of special-status species provided in the original EA may not adequately reflect the current information regarding special status species, this sub-section has been updated. Additional information is provided about the affected environment as it pertains to biological resources and, in particular, special-status species.

Special-Status Species

Federally Listed Species. There are 15 federally protected plant animal species with potential to occur at Beale AFB. Of these 15 species, only three have been detected at Beale:

- Vernal pool fairy shrimp (*Lepidurus packardi*)
- Vernal pool tadpole shrimp (*Branchinecta lynchi*)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

There are three additional species that have been detected near Beale AFB and for which potential habitat exists on Base:

- California red-legged frog (*Rana draytonii*)
- Giant garter snake (*Thamnophis gigas*)
- Central Valley steelhead (*Oncorhynchus mykiss*)

No federally listed plant species have been detected at Beale AFB.

Other Federally Protected Species. The Bald Eagle Protection Act of 1940 provides protection of the Bald eagle and the Golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The Bald eagle (*Haliaeetus leucocephalus*) is an irregular migrant to the area, and is considered to use the installation for occasional foraging. The Golden eagle (*Aquila chrysaetos*) uses grasslands and savannas for foraging and is a year-round visitor.

Several other special-status bird species occur on Beale AFB and have the potential to fly over or forage in the vicinity of the proposed project site. The Migratory Bird Treaty Act (MBTA) of 1918, as amended provides protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or

product, manufactured or not. The MBTA covers all birds listed as special-status species along with all other migratory birds.

California Listed Species. According to the Department of Fish and Game's California Natural Diversity Database (CNDDB), there are five species legally protected under the California Endangered Species Act (ESA) that either utilize or have the potential to utilize Beale AFB.

- Swainson's hawk (*Buteo swainsoni*)
- American peregrine falcon (*Falco peregrinus anatum*)
- California black rail (*Laterallus jamaicensis coturniculus*)
- Greater sandhill crane (*Grus canadensis tabida*)
- Bank swallow (*Riparia riparia*)

The Swainson's hawk prefers to nest in riparian areas with isolated trees bordered by open foraging habitat (grasslands, agricultural lands, etc.) and was first confirmed to be nesting on base in 2004. The base also provides suitable winter foraging habitat for the American peregrine falcon, which has been documented on the base many times in the winter. The California black rail has been detected through auditory surveys in several freshwater marshes on Beale AFB and is thought to be a yearlong resident. The greater sandhill crane is an irregular winter visitor on base; it uses annual and perennial grasslands, moist croplands, and open emergent wetlands for foraging. The Bank swallow has not been reported on Beale AFB, but its preference of riparian areas make its occurrence very likely. Beale AFB is a federal installation and therefore not required to protect state listed species; however, surveys are performed and management plans are in place to avoid impacting state listed species and their habitats.

Species of Special Concern. Species of special concern are sensitive species that have not been listed, proposed for listing nor placed in candidate status, but do not have any formal protection. Species of concern is an informal term used by some but not all U.S. Fish & Wildlife Service offices. Species of concern receive no legal protection, and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered. Several special-status species utilize or have the potential to utilize Beale Air Force Base. The most likely to occur at Beale AFB are:

- Western Burrowing Owl (*Athene cunicularia hypugaea*)
- Tri-colored Blackbird (*Agelaius tricolor*)
- White-tailed Kite (*Elanus leucurus*)
- Prairie Falcon (*Falco mexicanus*)
- Northern Harrier (*Circus cyaneus*)
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Loggerhead Shrike (*Lanius ludovicianus*)
- Yellow Warbler (*Dendroica petecha*)
- Western Pond Turtle (*Clemmys marmorata*)
- Ringtail (*Bassariscus astutus*)

3.3 Water Resources

Surface Water

Beale AFB has three main creeks that serve as the principal drainage system for the area: 1) Reeds Creek along the northwest border of the base, 2) Hutchinson Creek in the central portion and 3) Dry Creek in the southeast. Runoff in all three creeks ultimately flows south and west into either the Bear River or the Feather River. Hutchinson Creek serves as the principal surface drainage system for the project areas. Drainage swales drain the area in a southwesterly direction into drainage ditches and culverts that feed into Hutchinson Creek.

Floodplains

The vernal pool restoration project Site 2 is within the 100 and 500-year floodplain and is scattered with existing vernal pools. A small portion in the southernmost corner of Site 3 is within the 500-year floodplain. Vernal pools are primarily filled with rainwater within both areas and because of their shallow, low-volume nature, the pools make only a minor contribution to controlling surface runoff.

Surface water in the vicinity of the project sites is captured by intermittent drainages so no substantial amount of water flows through the project sites. Therefore, creation of additional vernal pools would have no significant effects to the vernal pools themselves or the overall drainage of the area.

Vernal Pools and Other Wetlands

Vernal pools are found throughout the base and near the proposed project sites. Vernal pools are small, shallow, seasonal bodies of water formed by an impervious claypan, hardpan, bedrock, or other water-restrictive layer beneath the soil surface. These pools provide unique habitat for plants and animals adapted to survive in both wet and dry conditions.

Groundwater

Groundwater generally flows west to southwest across the Beale AFB and is the source of water supply to the base. Drinking water wells at Beale can be found at 300 to 500 feet below ground surface (bgs). With the exception of some isolated hazardous waste sites, groundwater quality at all monitoring locations at Beale AFB meets all state and federal primary water quality standards.

3.4 Soils and Geological Resources

The Yuba County Soil Survey (USDA 1998) indicates that two soil map units occur at the Site 2 proposed vernal pool restoration location: San Joaquin loam, 0-1% slopes; Aiken-Horseshoe complex, 2-8% slopes. Most of Site 2 is mapped as San Joaquin loam, which is composed of San Joaquin loam soil and small areas of Perkins loam and Redding gravelly loam soils. All three soils are formed from mixed alluvium of the underlying Riverbank and Modesto Formations. The Aiken-Horseshoe complex is composed primarily of Aiken Loam and Horseshoe Loam, but includes small areas of similar soils. The San Joaquin loam and Aiken-

Horseshoe complex are well drained but permeability is moderately to very slow because of the water restrictive claypan and duripan, which typically perch water for some time between December and April.

According to the Yuba County soil survey, Site 3 is composed primarily of two soil map units: Pardee Gravelly Loam, 3-8% slopes; Pardee-Ranchoseco Complex, 0-3% slopes. Most of Site 3 is mapped as Pardee gravelly Loam, which formed from alluvium and is underlain by bedrock consisting of consolidated andesitic tuffaceous conglomerate. The Pardee-Ranchoseco complex is composed of Pardee gravelly loam, which occurs primarily on mounds, and Ranchoseco very cobbly loam, which occurs most often in intermound areas. The Pardee gravelly loam is well-drained with moderately slow permeability and the Ranchoseco very cobbly loam is moderately well-drained with moderate permeability.

Past land use practices at the proposed project locations have resulted in the alteration of natural landforms and topographic conditions throughout the sites, however these practices have not significantly altered native soil conditions at the sites.

3.5 Safety

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' health and safety during demolition and construction activities and facilities construction, and public safety during demolition and construction activities and during subsequent operations of those facilities.

All contractors performing construction activities at Beale AFB are responsible for following ground safety regulations and worker compensation programs and are required to conduct construction activities in a manner that does not pose any risk to its workers or base personnel. An industrial hygiene program addresses exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable.

Munitions

Beale AFB has several activities that require Explosive Quantity Distance (EQD) Safety Zones. These zones are established to minimize risk and exposure to individuals from explosives and explosive storage facilities. There are numerous EQD Safety Zones on the northern and southern parts of the base.

The land encompassing Beale AFB was originally part of Camp Beale. Camp Beale was established in 1942 and consisted of approximately 82,000 acres in Yuba and Nevada Counties. Between 1942 and 1964, large portions of Camp Beale were leased, transferred, or sold to other parties. Between 1942 and 1964 the U.S. Army conducted training and various munitions tests throughout Camp Beale. Since 1964, the USAF has also conducted munitions tests on Beale AFB. In 2001, the USACE conducted an archives search report (USACE 2001) to determine the historic land uses, range locations, and types of munitions that might have been used on Camp Beale.

As part of this report it was discovered that Beale AFB has 44 range sites. These range sites contain various munitions, unexploded ordnance (UXO), and Chemical Agent Identification Sets (CAIS). Most of the munitions, UXO, and CAIS on the surface of Camp Beale have been removed. However, munitions, UXO, and CAIS still can be found below the ground surface.

The need for munitions, UXO, and CAIS screening at potential UXO sites will be determined on a case by case basis. Any projects located within potential UXO sites would obtain an environmental restoration waiver from Headquarters (HQ) ACC/CEVR prior to commencement of construction activities. 9 CES/CEAN staff would be contacted prior to commencement of construction activities to determine if an ERP waiver is required for the Proposed Action for all proposed work on or near range sites and for safety requirements that would need to be followed during construction.

Bird Air Strike Hazard

Collisions between aircraft and wildlife are a concern throughout the world because they threaten passenger safety. Bird Air Strike Hazard (BASH) is a safety concern at Beale AFB because daily and heavy seasonal bird movements can create various hazards to aircraft. Beale aircraft have struck 47 birds in the last 3 years. Bird hazards exist on the airfield year-round with peaks in the spring and the fall during migration. Numerous species of birds are present on the base, but most strikes with aircraft are by small perching birds, waterfowl, and raptors (birds of prey). Heavy migratory density makes the wet season (fall through spring) a particular concern for waterfowl strikes. The base contains many seasonal wetlands that act as an attractant for waterfowl, wading birds, and gulls during the wet season. The surrounding agricultural areas act as food sources throughout the year.

The 9th Reconnaissance Wing Safety (9 RW/SE) office is the Office of Primary Responsibility (OPR) for the content and execution of the Beale Air Force Base Bird Aircraft Strike Hazard (BASH) Reduction Operational Plan (OPLAN) 91-212. The OPLAN is established in accordance with AFI 91-202, USAF Mishap Prevention Program, to initiate base-wide program to minimize aircraft exposure to potentially hazardous bird strikes and danger from other wildlife. The 9 RW/SE monitors base-wide compliance and reports all aircraft bird strikes and hazards. Beale AFB currently has a contract with USDA Wildlife Services to assist with management of the Beale AFB BASH program. The Bird Hazard Working Group (BHWG) collects and reviews data on bird strikes, recommends changes to operation procedures and habitat, and initiates changes to the 9 RW Bird Aircraft Strike Hazard Plan (BAFB 2009). The BHWG submits all major recommendations to the 9 RW Commander or Vice Commander for approval. Implementation of recommendations is through the normal chain of command (OPLAN 91-212).

4.0 Environmental Consequences

The results of the environmental analysis are presented in Chapter 4.0 of the original EA. This supplemental EA includes updated and additional information regarding environmental consequences of the Proposed Action.

4.1 Air Quality

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS “attainment” areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard. Although not applicable to Federal actions, significance thresholds as defined by FRAQMD guidelines are compared to the Proposed Action as a frame of reference. Significance thresholds for FRAQMD are shown in **Table 4-1**.
- Expose sensitive receptors to substantially increased pollutant concentrations.
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory.
- Exceed any Evaluation Criteria established by a SIP.

Table 4-1. FRAQMD Significance Thresholds

Project Type	Ozone Precursor Emissions		Respirable Particulate Matter Emissions
	NO _x (pounds per day)	ROG (pounds per day)	PM ₁₀ (pounds per day)
All	25	25	80

Source: FRAQMD 2009

Key:

NO_x = nitrogen oxides

ROG = reactive organic gases

PM₁₀ = respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter)

In addition to the *de minimis* emissions thresholds, Federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Class I area, and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 µg/m³ or more (40 CFR 52.21[b][23][iii]).

The Proposed Action would have short-term, minor, adverse impacts on air quality. Appendix D summarizes the annual estimated air quality emissions from construction, demolition, and operational activities. The estimated emissions from the Proposed Action would represent a

minor percentage of the air emissions inventory locally in Yuba County and would represent a negligible percentage of the air emissions inventory regionally within the SVI AQCR.

Since Beale AFB is located in an unclassified/attainment area for criteria pollutants identified by the USEPA, no formal conformity analysis is required. Emissions for the construction activities in the Proposed Action were calculated using the Urban Emissions Model (URBEMIS), which is used in California to evaluate the air quality impacts of land development projects. URBEMIS is approved by the FRAQMD. URBEMIS2007 Version 9.2.4 was run primarily in default mode as described in the URBEMIS2007, Version 9.2 User's Guide. For paving, rather than using the default of 25 percent of the total building project acreage, which underestimates the paved area, the actual proposed paved area was entered into URBEMIS. For construction conservation measures, the most conservative conservation measure in URBEMIS was chosen although actual conservation measures may be more stringent and result in lower emissions.

Daily construction emissions estimated using URBEMIS2007 are presented in Appendix D. Emissions estimated with and without conservation measures do not exceed the FRAQMD significance thresholds. Conservation measures would reduce emissions even further below the FRAQMD significance threshold. Emissions would be temporary in nature and would not exceed the FRAQMD significance thresholds.

Construction and Demolition Emissions. Emissions from construction and demolition activities associated with the Proposed Action would have short-term, minor, adverse impacts on local air quality and would have negligible impacts on regional air quality. Implementation of the Proposed Action would not result in violations of any ambient air quality standards. The construction activities as described in Section 2 would generate air pollutant emissions due to operation of construction equipment. Construction activities would also generate total suspended particulate (TSP) and PM₁₀ & PM_{2.5} emissions as fugitive dust from ground-disturbing activities (e.g., grading, trenching, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Construction activities would incorporate BMPs and Environmental Protection Measures to minimize fugitive particulate matter emissions. Additionally, construction workers commuting daily to and from the construction site in their personal vehicles would result in criteria pollutant emissions. All portable construction equipment larger than 50 brake-horse-power would be registered in the CARB Portable Equipment Registration Program prior to commencing construction activities. Appendix D contains detailed calculations and the assumptions used to estimate the air quality emissions from construction activities.

Operational and Area Source Emissions. The Proposed Action would only have negligible amounts of operation and area source emissions.

Greenhouse Gas Emissions. The Proposed Action would contribute directly to emissions of greenhouse gases from the combustion of fossil fuels from construction equipment. CO₂ accounts for 92 percent of all greenhouse gas emissions; electric utilities are the primary source of anthropogenic CO₂, followed by transportation. The California Energy Commission estimates

that in 2004, gross CO₂ emissions in California were 492 million metric tons of CO₂ equivalents (CEC 2006). Construction and demolition activities associated with the Proposed Action would emit negligible amounts of CO₂. Therefore, the Proposed Action would have negligible contribution towards statewide greenhouse gas emissions.

Summary. As shown in Appendix D, air quality emissions from the Proposed Action would be minor, would be less than 10 percent of the emissions inventory for SVI AQCR, and are below FRAQMD significance thresholds when employing FRAQMD conservation measures. There would be a negligible, adverse impact on local or regional air quality from implementation of the Proposed Action. Therefore, a conformity determination in accordance with 40 CFR 93-153(1) is not required, as the total of direct and indirect emissions from the Proposed Action would not be regionally significant (e.g., the emissions are not greater than 10 percent of the SVI AQCR emissions inventory). Appendix D contains detailed calculations and the assumptions used to estimate the air quality emissions from the Proposed Action's construction, demolition, and operational activities.

Environmental Protection Measures

Measure 1: Fugitive Dust Control. Contractors would be required to follow FRAQMD fugitive dust control measures, such as wind breaks and barriers, frequent water applications, application of soil additives, control of vehicle access, vehicle speed restrictions, covering of piles, use of gravel at site exit points, washing of equipment at the end of each work day and prior to site removal, and work stoppage.

The environmental protection measures used in the URBEMIS model for fugitive dust control include the following for fine and mass grading:

- Soil stabilizing measures such as replacing ground cover in disturbed areas as quickly as possible; watering exposed surfaces often; and strategic equipment loading/unloading;
- Unpaved roads measures to include managing haul road dust by watering these roads at least two times daily.

Measure 2: Construction Equipment Emission Controls. Construction equipment exhaust emissions would not exceed FRAQMD Regulation II, Rule 3.0, *Visible Emissions* limitations (40 percent opacity or Ringlemann 2.0). All construction equipment would be properly tuned and maintained prior to and for the duration of the Proposed Action. In addition, construction equipment and vehicles would reduce idling times to 5 minutes or less when possible.

The environmental protection measures used in the URBEMIS model for construction equipment emission controls include the following for demolition, grading, trenching, paving, and building construction:

- Construction equipment would use diesel particulate filters
- Construction equipment would use diesel oxidation catalysts.

Measure 3: Power Sources. The Proposed Action would utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.

4.2 Biological Resources

Implementation of the Proposed Action would result in an insignificant loss of disturbed nonnative grassland habitat during construction. The Proposed Action will provide foraging habitat for federally protected, state-listed, and special status species.

The Proposed Action avoids and minimizes potential construction-related disturbances (direct or indirect) on special-status plant and wildlife species and their habitat. Mitigation measures are described in Section 4.1 of the original EA, starting on page 30. Environmental protection measures will be implemented to minimize or compensate for potential impacts from the Proposed Action. These measures are intended to minimize potential impacts to protected species.

Environmental impacts of the Proposed Action and No Action Alternative on biological resources are discussed in Section 4.1 of the original EA, starting on page 30. Additional information about potential impacts to special status species is provided in this section.

Impacts to Federally Protected Species

- **Vernal Pool Fairy Shrimp** – Sites 2 and 3 were sampled for vernal pool fairy shrimp. Site 3 was sampled in 2007/2008 during both wet and dry seasons and no vernal pool fairy shrimp were found (EDAW 2009). Site 2 was sampled for special-status shrimp species in 2005 (Foothill Associates 2005). During the dry season, cysts of vernal pool fairy shrimp were found in 4 pools, and there were 2 more pools that were hydrologically connected to these (Rogers 2005). Project designs were modified in coordination with the USFWS to avoid these 6 pools in order to avoid impacts to the species. No listed shrimp were found during the wet season. Vernal pools with listed invertebrates were specifically chosen for inoculum collection (Jones and Stokes 1996), as the goal is to collect and spread their cysts into the newly created pools. A small amount of potential vernal pool fairy shrimp habitat would be directly impacted by the Proposed Action. Avoidance and minimization measures will ensure that impacts to this species are minimal. A Biological Opinion has been approved by the USFWS for the Proposed Action (see Appendix E).
- **Vernal Pool Tadpole Shrimp** – Sampling for protected vernal pool tadpole shrimp was conducted at Sites 2 and 3. No vernal pool tadpole shrimp were detected during sampling. Vernal pools with listed invertebrates were specifically chosen for inoculum collection, as the goal is to collect and spread their cysts into the newly created pools. Potential vernal pool tadpole shrimp habitat would be directly impacted by the Proposed Action. Avoidance and minimization measures will ensure that impacts to this species are minimal. A Biological Opinion has been approved by the USFWS for the Proposed Action (see Appendix E).
- **Valley Elderberry Longhorn Beetle (VELB)** – VELB habitat occurs along Dry Creek and Best Slough on Beale AFB. There is one elderberry shrub that would provide VELB habitat in the vicinity of Site 2 (BAFB 2008a); this shrub will not be impacted by the Proposed Action.

- **California Red-Legged Frog (CRLF)** - CRLF is not believed to occur on Beale AFB. Surveys conducted from 2005-2007 found no evidence of CRLF occurring on the base. Habitat assessments for the species have concluded that little, if any, adequate habitat occurs on the base, due to the presence of bullfrogs and non-native warm water fish (URS 2008). Habitat potentially suitable to support the CRLF is present at three locations and marginally suitable habitat at two locations on Beale AFB (URS 2008). The construction work will occur during the dry season (May-November) and will not impact any aquatic features that could be considered potential habitat for the species. There will be no significant impacts to this species as a result of the Proposed Action.
- **Giant Garter Snake** - Habitat assessment and trapping surveys were conducted in 2005; no snakes were detected but a few locations had potentially or marginally suitable habitat. The nearest documented record of the species is approximately 3 miles north of the base (Pers. Comm with Richard Montgomery, 2010). A portion of Reed's Creek is "potentially suitable habitat", and portions of Hutchinson Creek, Dry Creek, and Best Slough are considered "marginally suitable habitat" for the giant garter snake (Hansen 2005). The Proposed Action would not impact any areas considered to be potentially or marginally suitable habitat for giant garter snake. Additionally, the work will occur during the dry season, when snake mortality is least likely to occur.
- **Central Valley Steelhead** - Central Valley steelhead habitat occurs in Dry Creek downstream from Beale AFB and may occur on Beale AFB during high flow events. The project will not impact Dry Creek and will not disrupt upstream migration of salmonids.
- **Bald Eagle** – The Bald eagle prefers habitat near large open water bodies, such as rivers and lakes. The Bald eagle is an irregular migrant to the area, and is considered to use Beale AFB only for occasional foraging during the winter (BAFB 2008a). However, it does not nest on the base, and would not be impacted by the project.
- **Golden Eagle** – The golden eagle is a year-round visitor to the base, but does not use the project areas for more than occasional foraging. This species will not be impacted by the proposed action.

Impacts to State-Listed Species

- **Swainson's Hawk** – The Swainson's Hawk has been observed foraging at Beale AFB as a summer visitor. In the Central Valley, Swainson's hawk nest sites are more commonly found in riparian forest vegetation. The project does not involve any work near riparian areas; this species would not be impacted by the Proposed Action.
- **American Peregrine Falcon** – The American peregrine falcon is known to use grassland and woodland habitat at Beale AFB as an irregular fall/winter visitor. All work would be conducted during the summer season; this species would not be impacted by the Proposed Action.

- **California Black Rail** – The California black rail has been observed in several freshwater marshes on Beale AFB and is thought to be a yearlong resident. The Proposed Action does not involve any work near freshwater marshes; the California black rail would not be impacted by the Proposed Action.
- **Greater Sandhill Crane** – The greater sandhill crane uses grassland and marsh habitat types and is an irregular winter visitor. All work will be conducted during the summer season; this species would not be impacted by the Proposed Action.
- **Bank Swallow** – The bank swallow prefers riparian habitat types and nests along streamsides and on river banks. Bank swallows were not detected during surveys conducted on base, but there is potential for this species to use the base. The project does not involve any work near riparian areas; this species would not be impacted by the Proposed Action.

Impacts to Species of Special Concern

- **Western Burrowing Owl** – The western burrowing owl is known to be a yearlong resident at Beale AFB. The species lives in open grassland ecosystems and nest in holes in the ground. If a burrowing owl burrow is detected during preconstruction surveys or construction activities, a buffer would be set up around the location of the occupied burrow. No disturbance would occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding season of February 1 through August 31.
- **Tri-colored Blackbird** - The Tri-colored blackbird is generally considered a marsh species, nesting primarily in tule and cattail marshes. The Proposed Action does not involve work near any freshwater marshes. This species will not be impacted by the Proposed Action.
- **White-Tailed Kite** – This species nests in oak woodlands or in trees along marsh edges, it forages in grassland or other open vegetative communities. Peak nesting season for this species occurs between March and May. The white-tailed kite is assumed to be present on base year-round, but it cannot be considered to use the project areas for more than occasional foraging. This species will not be impacted by the Proposed Action.
- **Prairie Falcon** – The prairie falcon spends most of its time in annual grasslands and other open areas, but prefers to nest in cliff ledges. Prairie falcons are known to use Beale AFB in the fall and winter months. All work will be conducted during the summer season; this species would not be impacted by the Proposed Action.
- **Northern Harrier** – The northern harrier is a year round resident at Beale AFB, and breeds and forages in a variety of open vegetative communities. If a northern harrier nest is detected during preconstruction surveys or construction activities, a buffer would be set up around the location of the occupied nest. Due to the abundance of open vegetative communities at Beale AFB, this species would not be impacted by the Proposed Action.

- **Grasshopper Sparrow** – The grasshopper sparrow prefer large tracts of open grassland for nesting and foraging, and is a summer resident in the Central Valley. Due to the abundance of open grassland at Beale AFB, it is unlikely that this species would be impacted by the Proposed Action.
- **Loggerhead Shrike** – The loggerhead shrike breeds mainly in shrublands and open woodlands, usually in riparian edges. Breeding takes place between January and July. No active nests will be disturbed by the Proposed Action. The loggerhead shrike forages in the open grasslands, using trees/power lines/fences/etc for perches. The project does not involve work in or near shrublands/woodlands/riparian edges, so it is unlikely that this species would be impacted by the Proposed Action.
- **Yellow Warbler** – The yellow warbler occurs principally as a migrant and summer resident from late March through early October and breeds from April to late July. Yellow warblers generally occupy riparian vegetation. The project would not impact riparian areas at Beale AFB; therefore, this species would be impacted by the Proposed Action.
- **Western Pond Turtle** – The western pond turtle prefers ponds, marshes, and streams for foraging and cover; along with adjacent grasslands and savannas for nesting. It occurs in several locations on Beale AFB. The project would not impact ponds, marshes or streams; there will be no impacts to this species as a result of the Proposed Action.
- **Ringtail** - Ringtails prefer riparian forests, brushland, oak woodlands, and rocky hillsides. During trapping surveys conducted by the CSUS in 2000, scat was observed in the Dry Creek area. Vernal pool restoration would not impact riparian areas; there will be no significant impacts to this species as a result of the Proposed Action.

Environmental Protection Measures

Measure 1: Monitor Construction Activities. A qualified biologist would monitor all construction activities to ensure compliance with avoidance, minimization, and compensation components of the Proposed Action. The biological monitor would assist construction personnel in compliance with all conservation measures and guidelines. The monitor would be responsible for directing the placement of all stakes, flags, and barriers protecting sensitive resources.

Measure 2: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions. The biological monitor should conduct environmental awareness training for construction crews before and during project implementation. The education program would briefly cover vernal pools and their associated endangered species and wetlands that might be encountered during construction. Awareness training would cover all restrictions and guidelines that must be followed by construction crews to avoid or minimize impacts on vernal pools, sensitive species, and wetlands.

Measure 3: Environmental Awareness Training. Environmental awareness training would be conducted prior to construction, when crews are about to enter potentially sensitive areas, and when new personnel join the construction crews.

Restrictions and guidelines that would be observed by construction crews include:

- All vehicle operators would observe the posted speed limit on paved roads and a 20-mile per hour speed limit on unpaved roads.
- Off-road travel by vehicles or construction equipment would be prohibited outside of designated work areas.
- No nonmilitary firearms or pets would be allowed in the Proposed Action area.
- Motor vehicles and equipment would be fueled and serviced in designated service areas.
- Any worker that inadvertently kills or injures a special status species, or finds one injured or trapped, would immediately report the incident to the biological monitor. The biological monitor would inform 9 CES/CEV of the incident. Furthermore, 9 CES/CEV would verbally notify the USFWS, Sacramento Endangered Species Office, within 3 days and would provide written notification of the incident within 5 days.

Measure 4: Stake and Flag Boundaries of Work Areas. The project proponent should stake and flag the boundaries of all work and staging areas in portions that have the potential to support vernal pool tadpole and fairy shrimp or their habitat. Staking and flagging should be done before construction commences to ensure that construction vehicles, equipment, and personnel would not enter areas that have the potential to be occupied by vernal pool tadpole and fairy shrimp. The project proponent should remove all stakes and flagging within 60 days of construction completion.

Measure 5: Stake and Flag Boundaries of Adjacent Vernal Pools and Other Wetlands. Potential wetlands adjacent to the construction area should be protected by placing orange barrier material or stakes and flagging around the perimeter of the wetland or vernal pool area. The location of these barriers should be clearly marked on construction plans and their placement supervised by the biological monitor.

Measure 6: Disposal of Excavated Soil. All soil excavated during construction of the perimeter fence, gates, and AFCOMAC projects occurring in potential branchiopod habitat should be removed and disposed of outside the project area. Coordination with 9 CES/CEV is required prior to disposing of this excavated soil.

Measure 7: Compensation for Direct and Indirect Impacts on Special-Status Species. This project is being implemented to compensate for adverse effects on the habitat of listed vernal pool invertebrates. It is assumed that all vernal pools and depression seasonal wetlands within the project area provide potential habitat for vernal pool tadpole and fairy shrimp. It is further assumed that all wetlands within the Proposed Action area would be directly and permanently impacted by the Proposed Action. These impacts are considered adverse.

Measure 8: Pre-construction Bird Surveys

A qualified biologist will survey the proposed project site for special-status species and MBTA birds and their nests or burrows. Unoccupied trees would be removed only after it has been verified that the trees do not harbor any birds; removal of occupied trees would be postponed until after nesting season, after field verification that all fledglings have left the nest(s). If a nest or burrow of a special-status bird species is detected during pre-construction surveys or

construction activities, a buffer would be set up around the location of the occupied nest/burrow. No disturbance would be allowed to occur within 50 m of occupied nests/burrows during the non-breeding season (varies by species) or within 75 m of occupied nests/burrows during the breeding season (varies by species).

4.3 Water Resources

Impacts to water resources are similar to what is described in Section 4.3, starting on page 33 of the original EA. No significant amount of surface flow runs through Site 2 or Site 3.

Construction activities have the potential to cause minor sedimentation and erosion at the project site or in adjacent staging areas. A Storm Water Pollution Prevention Plan would be prepared to address potential storm water pollution associated with the vernal pool restoration project. Best Management Practices (BMPs) would be implemented according to the Storm Water Pollution Prevention Plan. Implementation of the Proposed Action is expected to have no direct or indirect adverse effects on water quality.

4.4 Soils and Geological Resources

Impacts to geological resources are described in Section 4.2, starting on page 33 of the original EA. Beale Air Force Base is not in or near any Alquist-Priolo Earthquake Fault Zones. The vernal pool restoration project sites are not located on soils that are unstable or expansive, and will not cause seismic activities or landslides. Direct or indirect impacts on soils, regional or local topography, or physiographic features would not be significant from implementation of the Proposed Action.

4.5 Safety

Implementation of the Proposed Action would represent a significant impact to safety were it to substantially increase risks associated with the safety of Beale AFB personnel, contractors, or the local community. Alternatively, the Proposed Action would represent a significant impact were it to substantially hinder the ability to respond to an emergency. Impacts were assessed based on the potential effects of construction activities.

Short-term, minor adverse effects would be expected from the Proposed Action. Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at Beale AFB during the normal workday, because the level of such activity would increase. Contractors would be required to establish and maintain safety programs. Projects associated with the Proposed Action would not pose a safety risk to base personnel or activities at the base.

Munitions

During construction activities associated with the Proposed Action, construction workers and equipment would have a possibility of encountering Unexploded Ordnance (UXO) or Chemical Agent Identification Sets (CAIS). An ERP/MMRP waiver approved by HQ ACC is required prior to accomplishing any work on or near a historic munitions range. The 9 CES/CEAN staff would be contacted prior to commencement of construction activities to determine if an

ERP/MMRP waiver is required for the Proposed Action and to provide information on safety requirements that would need to be followed during construction.

Bird Air Strike Hazard

The Proposed Action would create new vernal pools on Beale AFB. This is a potential safety concern as the addition of vernal pools may attract wildlife and increase the risk for bird aircraft collisions. In 2005, the 9th Reconnaissance Wing Safety (9 RW/SE) office was consulted during the design phase of the vernal pool restoration project. The safety office recommended that no vernal pools should be created within ½ mile of the centerline of the runway, which is the airspace where the risk of a strike is the highest. Site 2 is located more than 2 miles off the southwest end of the aircraft runway. In order to minimize BASH, the design boundary for Site 2 was truncated so that no vernal pools would be created within ½ mile of the centerline of the runway. This change to the project design would minimize and avoid BASH associated with the Proposed Action. The decision to proceed with vernal pool creation at Sites 2 and 3 was briefed to the 9th Reconnaissance Wing Vice Commander and the Environmental Leadership Committee in 2005; the project sites were approved.

In 2009, the issue was discussed further with the 9th Reconnaissance Wing Vice Commander, and the 2005 decision to proceed with vernal pool creation at the sites did not change. There were several reasons that this decision was made. First, there are already seasonal wetlands at Site 2 and, because the project will only modify these wetlands, it is unlikely that the risk for bird aircraft collisions would increase significantly as a result of the Proposed Action. Secondly, Beale AFB would implement bird monitoring at Site 2 for 10 years following vernal pool restoration, in order to determine what impact (if any) the project will have on bird populations in the vicinity of Site 2. Finally, the USDA Wildlife Service Flight Safety Expert is aware of the vernal pool restoration project and will be available to assist with minimizing BASH at Beale.

5.0 Cumulative and Adverse Impacts

During the timeframe of the Proposed Action, several other construction actions are scheduled to take place on Beale AFB.

- Land-Based Discharge (2010-2011)
- Replace Bridge 2627 (2009-2010)
- Construct New Fitness Center (2011-2012)
- J Street Water Main Repair (2010-2011)
- Anti Terrorism/Force Protection Gate Improvements (2010-2011)
- Base Perimeter Fencing (2009-2011)
- Munitions Complex Upgrades (2010-2011)
- Small Arms Range Construction (2011-2012)
- Military Family Housing Water Main Replacement (2010-2011)
- Connect Contingency Water Well to Base Water Supply (2011-2012)
- Construction Bulk Construction Material Storage Area (2011-2012)
- Antenna Installation (2009-2010)
- Construction of a Child Development Center (2010 -2011)

Table 5-1 summarizes potential cumulative effects on resources from the Proposed Action, when combined with other past, present, and future activities. As seen in Table 5-1, no significant impacts on the environment would be anticipated from the Proposed Action in conjunction with these projects.

Table 5-1. Cumulative Effects on Resources

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Biological Resources	Degraded historic habitat of sensitive and common wildlife species.	Beale AFB operations and development impact wildlife habitat.	Minor disturbance of vegetation by construction. Direct and indirect impacts on threatened and endangered species.	Minor disturbance of vegetation by construction. Direct and indirect impacts on threatened and endangered species.	Permanent loss of vegetation and low quality habitat. Direct and indirect impacts on threatened and endangered species. Effect not significant.
Water Resources	Surface water quality moderately impacted by development.	Surface water quality moderately impacted by development.	Potential sedimentation from construction activities.	Potential sedimentation from construction activities and minor increase in percentage of impervious surface area.	Increased impervious area would have negligible impacts on storm water discharges and water quality. Effect not significant.
Geological Resources	Past Beale AFB development has modified soils.	Beale AFB development modifies soils.	Grading, excavating, and recontouring of the soil would result in further soil disturbance.	Grading, excavating, and recontouring of the soil would result in further soil disturbance.	Impacts would be permanent but localized. Effect not significant.
Air Quality	Moderate transitional non-attainment area for O ₃ .	Emissions from aircraft, vehicles, and stationary equipment.	Potential dust generation during soil removal, site grading, and construction.	Potential dust generation during soil removal, site grading, and construction.	Continued moderate transitional non-attainment area for O ₃ . Actions would be <i>de minimus</i> . Effect not significant.
Safety	Portions of the base have been used as active ranges.	Identification and recordation of historic and active ranges.	Short-term impacts on construction workers from construction activities and potential UXO/CAIS.	Short-term impacts on construction workers from construction activities and potential UXO/CAIS.	None.

6.0 References

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SMAQMD 1994	Sacramento Metropolitan Air Quality Management District (SMAQMD). 1994. Thresholds of Significance. December 1994.
USACE 2001	U.S. Army Corps of Engineers (USACE). <i>Archives Search Report: Camp Beale Ordnance & Explosive Cleanup Project</i> . Prepared by TechLaw, Inc. October 2001.
USDA 1998	United States Department of Agriculture (USDA). Natural Resources Conservation Service. 1998. Soil Survey of Yuba County, California.
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USEPA 2009a	USEPA. 2009. The Green Book Nonattainment Areas for Criteria Pollutants. Current as of February 19, 2009. Available online: < http://www.epa.gov/air/oaqps/greenbk/anay.html >. Accessed 27 March 2009.
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URS 2008	URS Corporation. 2008. Amphibian Habitat Assessment for Beale Air Force Base, Oakland CA.

7.0 List of Preparers and Reviewers

This report has been prepared by the United States Air Force at Beale Air Force Base, California. Those involved in preparation of this report are listed below:

Dawn Coultrap

Contract Biological Support

Darren Rector

Beale AFB Air Quality Program Manager

Appendix A
Original Environmental Assessment
Wing Infrastructure Development Outlook (WINDO)
Implementation Plan
Volume 2
(CD attached)

Appendix B

Original Signed FONSI and FONPA

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
AND
FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)**

1.0 NAME OF THE PROPOSED ACTION

Wing Infrastructure Development Outlook (WINDO) Implementation Plan (FY 04-06) at Beale Air Force Base (AFB), California: Volume 2.

2.0 DESCRIPTION OF PROPOSED ACTION AND NO ACTION ALTERNATIVES

Proposed Action. The Proposed Action consists of 12 projects. These 12 projects (construction, demolition, and restoration) are listed below. No changes in personnel requirements or aircraft operations would occur.

- **Construct Heritage Park.** Enhance the sense of community, mission, and history for Beale AFB personnel and visitors.
- **Install Global Hawk Launch and Recovery Element (LRE) Cables.** Support Global Hawk mission requirements.
- **Upgrade JP-8 Hydrant Pit and Lids.** Upgrade existing hydrants that do not meet American Petroleum Institute standards, and improve worker safety and working conditions.
- **Vernal Pool Restoration Phase 2.** Mitigate for past threatened and endangered species habitat impacts as well as restore areas to be used toward future mitigation requirements.
- **Construct Visitor Center Main Gate.** Improve AT/FP for the base, streamline driver and security pass processing, and improve safety conditions for visitors to the base.
- **Pollution Prevention (P2) Rock Crusher.** Clean up and recycle concrete and asphalt piles and foundations, comply with Public Resources Code 40191, and correct a notice of violation from the Yuba County Environmental Health Department.
- **Construct Flightline Centralized Parking South Access Road.** Increase AT/FP in the vicinity of the flightline, and improve and control vehicular traffic in the vicinity of flightline infrastructure and facilities.
- **Construct Gas Service Station, Auto Hobby Shop, and Car Wash.** Provide a second service station on the base, and provide personnel on the base with a controlled area to service their own vehicles.
- **Erosion Control at Upper Blackwelder Lake.** Repair extensive erosion and downstream sedimentation at the western end of Upper Blackwelder Lake, and remove all concrete debris that has been placed into the two southwestern drainages to stop this erosion from advancing.
- **Erosion Control at Miller Lake.** Repair extensive erosion and downstream sedimentation at Miller Lake Dam, improve the integrity of the dam, and repair unsafe conditions.
- **Erosion Control at Lower Blackwelder Dam.** Repair extensive erosion and downstream sedimentation at Lower Blackwelder Lake Dam, improve the integrity of the dam, and repair unsafe conditions.
- **Repair Force Protection at Recce Point Club.** Comply with AT/FP standards that require parking to be sufficient distance from all critical facilities and infrastructure.

No Action Alternative. Under the No Action Alternative, Beale AFB would continue to use its facilities and infrastructure in its current condition and configuration. This alternative would not address the mission, security, and safety requirements of the ACC and Beale AFB, or meet the standards specified in Unified Facilities Criteria 4-010-01.

3.0 SUMMARY OF ENVIRONMENTAL EFFECTS

Biological Resources. Approximately 0.80 (direct 0.21 and indirect 0.59) acres of potential branchiopod habitat would be impacted by the Proposed Action. To minimize or compensate for potential impacts associated with the Proposed Action, approximately 1.59 acres of suitable branchiopod habitat would be preserved and 0.21 acres of suitable branchiopod habitat would be restored. A Biological Opinion was approved by the U.S. Fish and Wildlife Service (USFWS) for the Proposed Action on 24 June 2005.

The P2 Rock Crusher and Vernal Pool Restoration Phase 2 projects would result in beneficial effects on threatened and endangered species habitat because there would be a net increase of vernal pools on Beale AFB. Habitat creation and restoration activities under these projects would not contribute to adverse cumulative effects on special status species or their sensitive habitats because no permanent loss of these habitats would occur.

Water Resources. Other than as stated in biological resources above, there would be no significant impact on surface waters or groundwater as a result of implementation of the Proposed Action. The effects from minor increases in storm water runoff could lead to erosion, transfer of pollutants, or flooding; however, these effects would not be substantial.

The Proposed Action involves construction activities within the 100-year floodplain on Beale AFB. The U.S. Air Force (USAF) has prepared a FONPA demonstrating there are no practicable alternatives to the Proposed Action that would result in fewer impacts on the floodplain. Most of the construction activities occur in areas that are already disturbed. During construction, impacts would be kept as minimal as possible by using best available control measures. In addition, the Proposed Action would be designed to allow adequate storm water drainage and free flow of water during rain events. Therefore, the Proposed Action would not have an adverse impact on the 100-year floodplain on Beale AFB.

The Proposed Action would directly impact 13.69 acres of jurisdictional waters of the U.S. Section 401 and 404 permit applications were approved by the U.S. Army Corps of Engineers, Sacramento District and the California Regional Water Quality Control Board, Central Valley Region for the Install Global Hawk LRE Cables and Erosion Control at Upper Blackwelder Lake projects in July 2005. The base will submit Section 401 and 404 permit applications for Construct Heritage Park, Vernal Pool Restoration Phase 2, Construct Visitor Center Main Gate, Erosion Control at Miller Lake, and Erosion Control at Lower Blackwelder Lake projects once project designs are complete. Approval of these Section 401 and 404 permit applications would be obtained prior to commencement of construction activities.

Geological Resources. There would be no significant impacts on geological resources as a result of implementation of the Proposed Action. The effects on soil erosion and sedimentation from construction activities are considered minor because erosion and sediment controls would be in place during construction to reduce and control siltation or erosion impacts to areas outside of the construction site.

Cultural Resources. There is a potential for impacts on one archaeological site within the Area of Potential Effect (APE) of Vernal Pool Restoration Phase 2 resulting from subsurface excavation, grading, operation, or maintenance associated with construction of the proposed projects. Consultation with the State Historic Preservation Officer (SHPO) would be undertaken during the Vernal Pool Restoration

Phase 2 project design process. Completion of Section 106 consultation with SHPO is required prior to commencement of construction activities.

Air Quality. There would be no significant impacts on regional or local air quality from the Proposed Action. The effects on air quality would be a temporary increase in construction-related emissions during project construction. The Proposed Action would generate emissions well below conformity *de minimis* limits as specified in 40 Code of Federal Regulations Part (CFR) 93.153. Because the emissions generated would be below *de minimis* levels, it is reasonable to assume that the temporary construction emissions caused by the Proposed Action would not cause a violation of the National Ambient Air Quality Standards, and a full Conformity Determination would not be required.

Hazardous Materials and Waste Management. There would be no significant impacts on hazardous materials and wastes management due to implementation of the Proposed Action. Minor hazardous materials and wastes would be generated during project construction. In addition, the Proposed Action is within or in close proximity to four open Environmental Restoration Program (ERP) sites: SD-01, West Side Drainage Ditch; WP-16, Explosive Ordnance Disposal Area; ST-22, Basewide Underground Storage Tanks; and SD-32, Building 1086. The ERP Program Manager would consult with the HQ Restoration Program Manager and arrange for a waiver to the restrictions on disturbing an ERP site prior to the proposed projects commencing construction activities. Because of the potential threat of contamination from ERP sites during construction, it is recommended that a health and safety plan be prepared in accordance with Occupational Safety and Health Administration (OSHA) requirements prior to commencement of construction activities. In addition, should contamination be encountered, handling, storage, transportation, and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations, Air Force Instructions, and Beale AFB programs and procedures. While working within ERP Site SD-01, workers would either be 40-hour Hazardous Waste Operations and Emergency Response trained, or would be overseen by a supervisor with OSHA Site Supervisor certification.

Transportation. There would be no significant impacts on transportation due to implementation of the Proposed Action.

Safety and Military Munitions Response Program (MMRP). There would be no significant impacts on structure or personnel safety due to implementation of the Proposed Action. Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at Beale AFB during the normal workday because the level of such activity would increase.

The 12 proposed project sites are located within ranges sites. These range sites contain various munitions, unexploded ordnance (UXO), and Chemical Agent Identification Sets (CAIS). Most of the munitions, UXO, and CAIS on the surface have been removed. However, munitions, UXO, and CAIS still can be found below the ground surface. The need for munitions, UXO, and CAIS screening at potential UXO sites would be determined on a case by case basis. Any projects located within potential UXO sites would obtain an environmental restoration waiver from HQ ACC/CEVR prior to commencement of construction activities. The ERP Program Manager would consult with the HQ Restoration Program Manager and arrange for a waiver to the restrictions on disturbing areas with potential munitions, UXO, and CAIS prior to commencement of construction activities.

4.0 CONCLUSION

Based on the provisions set forth in the Proposed Action, all activities were found to comply with the criteria or standards of environmental quality and coordinated with the appropriate Federal, state, and

local agencies. The attached EA and a draft of this FONSI/FONPA were made available to the public on 16 August 2005 for a 30-day review period. Agencies were coordinated with throughout the EA process and their comments were incorporated into the analysis of potential environmental impacts performed as part of this EA. No public comments were received during this review period.

5.0 FINDINGS

Finding of No Practicable Alternative. Reasonable alternatives were considered, but no other alternative to the Proposed Action meets the safety or operational requirements of the 9th Reconnaissance Wing (9 RW). Pursuant to Executive Orders 11988 and 11990 and the authority delegated by Secretary of the Air Force Order 791.1, and taking the above information into account, I find that there is no practicable alternative to this action and that the Proposed Action includes all practicable measures to minimize harm to the environment. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

Finding of No Significant Impact. After review of the EA prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and *Environmental Impact Analysis Process*, 32 CFR Part 989, as amended, I have determined that the Proposed Action would not have a significant impact on the quality of the human or natural environment. An Environmental Impact Statement will not be prepared. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.


TIMOTHY A. BYERS

Colonel, USAF

Director of Installations and Mission Support (A7)

20 OCT 05

Date

Appendix C

Public Notice

APPEAL-DEMOCRAT

1530 Ellis Lake Drive, Marysville, CA 95901
(530) 741-2345

Affidavit of Publication

(2015.5 C.C.P)

STATE OF CALIFORNIA,

Counties of Yuba and Sutter

9 CES/CEVA – Beale Air Force Base

Notice of Availability

I am not a party to, nor interested in the above entitled matter. I am the principal clerk of the printer and publisher of THE APPEAL-DEMOCRAT, a newspaper of general circulation, printed & published in the City of Marysville, County of Yuba, to which Newspaper has been adjudged a newspaper of general circulation by The Superior Court of the County of Yuba, State of California under the date of November 9, 1951, No. 11481, and County of Sutter to which Newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sutter, State of California under the date of May 17, 1999, Case No. CV PT99-0819 that the notice of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

August 10, 2010

I declare under penalty of perjury
that the foregoing is true and correct.
Executed at Marysville, California

August 11, 2010

Date: _____



(Signature)

This space is for the County Clerk's filing stamp.

PROOF OF PUBLICATION

PUBLIC NOTICE

Notice of Availability

DRAFT SUPPLEMENTAL

ENVIRONMENTAL ASSESSMENT (EA)

FOR VERNAL POOL RESTORATION IN THE
WING INFRASTRUCTURE DEVELOPMENT OUTLOOK
(WINDO) IMPLEMENTATION PLAN
AT BEALE AIR FORCE BASE, CALIFORNIA

The U.S. Air Force at Beale Air Force Base (AFB), California, proposes continuation of projects to create and restore vernal pools. The objective of the EA is to analyze and disclose any potential environmental impacts. In accordance with 32 CFR 989, the Air Force is required to prepare an EA and provide documentation for public review. A draft EA has been prepared and is available for review.

The review period for this EA is thirty (30) days. The document will be available for review at the Beale AFB Environmental Office for 30 days from the date of this publication. Copies can also be obtained by calling (530) 634-2593 or by mailing a request to 9 CES/CEAO, 6601 B Street, Beale AFB, CA 95903, Attn: Ms. Sheri Rolfsness.

August 10, 2010

Ad #00103548

Appendix D

Air Emissions Calculations and Report

7/15/2010 10:14:20 AM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Darren.Rector\AppData\Roaming\Urbemis\Version9a\Projects\Vernal Pool.urb924

Project Name: Vernal Pool

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (lbs/day unmitigated)	2.00	15.83	8.21	0.00	145.01	0.89	145.90	30.28	0.82	31.11	1,597.73
2010 TOTALS (lbs/day mitigated)	2.00	15.83	8.21	0.00	145.01	0.89	145.90	30.28	0.82	31.11	1,597.73

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	3.82	0.02	1.55	0.00	0.01	0.01	2.81

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	0.27	0.01	0.08	0.00	0.02	0.00	9.66

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	4.09	0.03	1.63	0.00	0.03	0.01	12.47

Construction Unmitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 8/2/2010-11/1/2010 Active Days: 66	<u>2.00</u>	<u>15.83</u>	<u>8.21</u>	<u>0.00</u>	<u>145.01</u>	<u>0.89</u>	<u>145.90</u>	<u>30.28</u>	<u>0.82</u>	<u>31.11</u>	<u>1,597.73</u>
Fine Grading 08/02/2010-11/01/2010	2.00	15.83	8.21	0.00	145.01	0.89	145.90	30.28	0.82	31.11	1,597.73
Fine Grading Dust	0.00	0.00	0.00	0.00	145.00	0.00	145.00	30.28	0.00	30.28	0.00
Fine Grading Off Road Diesel	1.95	15.46	7.28	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,475.36
Fine Grading On Road Diesel	0.02	0.33	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	45.75
Fine Grading Worker Trips	0.03	0.05	0.82	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.62

Phase Assumptions

Phase: Fine Grading 8/2/2010 - 11/1/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 29

Maximum Daily Acreage Disturbed: 7.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 11.36

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 8/2/2010-11/1/2010 Active Days: 66	<u>2.00</u>	<u>15.83</u>	<u>8.21</u>	<u>0.00</u>	<u>145.01</u>	<u>0.89</u>	<u>145.90</u>	<u>30.28</u>	<u>0.82</u>	<u>31.11</u>	<u>1,597.73</u>

7/15/2010 10:14:20 AM

Fine Grading 08/02/2010-11/01/2010	2.00	15.83	8.21	0.00	145.01	0.89	145.90	30.28	0.82	31.11	1,597.73
Fine Grading Dust	0.00	0.00	0.00	0.00	145.00	0.00	145.00	30.28	0.00	30.28	0.00
Fine Grading Off Road Diesel	1.95	15.46	7.28	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,475.36
Fine Grading On Road Diesel	0.02	0.33	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	45.75
Fine Grading Worker Trips	0.03	0.05	0.82	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.62

Construction Related Mitigation Measures

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	3.70						
TOTALS (lbs/day, unmitigated)	3.82	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
Vernal Pool Remediation	0.27	0.01	0.08	0.00	0.02	0.00	9.66

7/15/2010 10:14:20 AM

TOTALS (lbs/day, unmitigated)	0.27	0.01	0.08	0.00	0.02	0.00	9.66
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Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Vernal Pool Remediation		0.05	acres	29.00	1.45	10.66
					1.45	10.66

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.0	0.0	99.0	1.0
Light Truck < 3750 lbs	45.0	0.0	93.6	6.4
Light Truck 3751-5750 lbs	0.0	0.0	0.0	0.0
Med Truck 5751-8500 lbs	0.0	0.0	0.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.0	0.0	0.0	0.0
Lite-Heavy Truck 10,001-14,000 lbs	0.0	0.0	0.0	0.0
Med-Heavy Truck 14,001-33,000 lbs	0.0	0.0	0.0	0.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.0	0.0	0.0	0.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	0.0	0.0	0.0	0.0

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School Bus	0.0	0.0	0.0	0.0
Motor Home	0.0	0.0	0.0	0.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Vernal Pool Remediation				0.0	0.0	100.0

Operational Changes to Defaults

Appendix E
Biological Opinion



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In reply refer to:
1-1-06-F-0250

SEP 25 2006

Lt. Col. John M. Griffin
Commander, 9th Civil Engineer Squadron
Department of the Air Force
9th CES/CEV
6451 B Street
Beale Air Force Base, California 95903-1708

Subject: Formal Endangered Species Consultation on the Site 2 Vernal Pool
Restoration, Beale Air Force Base, Yuba County, California

Dear Lt. Col. Griffin:

The U.S. Fish and Wildlife Service (Service) has received your July 24, 2006, letter requesting formal consultation and has reviewed the information you have provided for the proposed Site 2 Vernal Pool Restoration project (project), on Beale Air Force Base (Beale AFB), Yuba County. Your July, 2006, *Vernal Pool Restoration, Site 2 Biological Assessment* and request for consultation were received on July 25, 2006. This document represents the Service's biological opinion on the potential effects of the proposed actions on the threatened vernal pool fairy shrimp (*Branchinecta lynchi*) and the endangered vernal pool tadpole shrimp (*Lepidurus packardii*), in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act). The Service has determined that in addition to the federally-listed vernal pool crustaceans, the proposed project is within the known range of the threatened California red-legged frog (*Rana aurora draytonii*), the threatened giant garter snake (*Thamnophis gigas*), the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and the threatened bald eagle (*Haliaeetus leucocephalus*)

The Service has reviewed the proposed project and has determined that the project is not likely to adversely affect the California red-legged frog, the giant garter snake, the valley elderberry longhorn beetle, or the bald eagle. No proposed or designated critical habitat is present for these or other species in the action area. Therefore no critical habitat will be affected. For the California red-legged frog, we make this determination because project activities will take place during the dry season and they will occur more than 300 feet from suitable aquatic habitat. For the giant garter snake, we make this determination because Beale AFB lies east of known

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occurrences of the snake. A site assessment for the snake was completed and determined that the nearby Hutchinson, Dry, and Reeds Creek drainages provide marginal or suitable habitat for the snake. Additionally, a possible sighting of a giant garter snake at Reeds Creek in June, 2004, prompted visual and trapping surveys of Reed's Creek and Dry Creek/Best Slough for the giant garter snake in 2005. Although valley garter snakes were detected, no giant garter snakes were located. Finally, during the period when construction will occur, project activities will occur greater than 200' from potential habitat for the snake. For the valley elderberry longhorn beetle, we make this determination because the beetle's host species, the elderberry shrub (*Sambucus* sp.), is not present within the project action area. The proposed project is not likely to adversely affect the bald eagle because the nearest nesting pair is more than 5 miles from the project site, and construction will occur outside of the nesting season.

This biological opinion is based, in part, on information provided in the: (1) *Final Conceptual Vernal Pool Restoration and Monitoring for the Habitat Conservation and Management Plan for Beale Air Force Base* (CVPRM) (Jones and Stokes 1998a); (2) the *2004 Vernal Pool Restoration Area, Site 2 Jurisdictional Delineation* (Wildlands, Inc.); (3) the April, 2002, *Draft Final Habitat Conservation and Monitoring Plan for Beale Air Force Base* (Beale AFB 2002); (4) the 2006, site visit to the proposed project area at Beale AFB by Karen Leyse of the Service and Kirsten Christopherson of Beale AFB; (7) the *Integrated Natural Resources Management Plan, Beale Air Force Base, California March 2005 to March 2009* (Beale AFB 2005); (8) the July 2006 *Vernal Pool Restoration, Site 2 Biological Assessment* (Biological Assessment); (9) the July 24, 2006, letter from Lt. Col John M. Griffin of Beale AFB to the Service requesting formal consultation on the proposed project; (10) telephone calls and electronic mail (email) communications between Kirsten Christopherson and Karen Leyse of the Service; and (11) other information available to the Service.

Consultation History

April 7, 2006. Kirsten Christopherson of Beale AFB contacted Karen Leyse of the Service via email to describe the upcoming vernal pool restoration project and to initiate informal consultation.

April 27, 2006. Karen Leyse of the Service and Kirsten Christopherson of Beale AFB conducted a site visit to the restoration project area.

May 2, 2006. Kirsten sent the Service an email, with an attachment providing a table of the acres of vernal pool compensation needed on Beale AFB, by project.

July 20, 2006. Karen Leyse and Holly Herod of the Service met with Kirsten Christopherson and Chuck Carroll of Beale Air Force Base at Beale to discuss general base project, including brief discussion of the Site 2 restoration project and compensation needs of past projects, specifically the security fence project (Service File #04-F-0294).

July 25, 2006. The Service received a letter requesting formal consultation and a biological assessment for the proposed projects. The July, 2006, *Vernal Pool Restoration, Site 2 Biological Assessment*; historic aerial photos; the *2004-2005 Wet-season survey for listed vernal pool branchiopods*; the *Results of dry-season special status species crustacean surveys*; the *Giant garter snake habitat assessment and trapping results*; the *California red-legged frog site assessment*; and other appendices were included with the letter.

August 8, 2006. Kirsten Christopherson sent the Service an email answering questions from the Service on the design and specifications for the restoration/creation project.

September 18 and 19, 2006. Kirsten Christopherson of Beale AFB and Karen Leyse of the Service exchanged multiple emails and phone calls to resolve Service concerns regarding created and restored pool densities for wetted acres of vernal pool habitat, and a series of small questions about the project design and site conditions.

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed project is located on Beale AFB, and is one of three on-base sites targeted for the restoration and creation of vernal pools. The project site is on the east side of the southern base entrance road (J Street), just south of the Wheatland Gate. The project area is bounded on the north by Pheasant Farm Road, by J Street on the west, by Ostrom Road on the south, and by the runway flight safety restricted area on the east. The area had natural vernal pool topography, as viewed in early aerial photographs. However, it has been farmed periodically over the mid to late 20th century. In the 1970s the hydrology of the site was altered by construction of rice checks consistent with rice farming. It was rice-farmed until the 1980s; since then the site has consisted of fallow, degraded wetlands that have saturated soils, but do not hold water. At least 1.94 acres of vernal pools will be constructed before the rainy season in the fall of 2006. An additional 12.68 acres of pools may be constructed in the restoration site during the same period in 2006, or may be constructed in subsequent dry seasons as funding become available. The project will results in "indirect" effects to a maximum of 3.0 acres of vernal pool wetted acres.

Construction of vernal pools at Site 2 will be managed to ensure that vernal pools are constructed as designed, and that impacts to existing wetlands are avoided or minimized. Placement of existing vernal pool topsoil ("inoculum") is the preferred method to establish vernal pool plant and animal communities. Topsoil will be collected from pools where dry-season soil analysis shows evidence of federally-listed shrimp cysts or where past surveys have shown evidence of adult federally-listed crustaceans, as illustrated in Figure 4-4 of the biological assessment. Only pools with low levels of weed density will be slated for inoculum salvage to minimize weed introduction to constructed vernal pools on the restoration site. The vernal pools will be

monitored for 10 years post-construction in compliance with the Monitoring Guidelines in the Beale AFB Habitat Conservation and Management Plan.

The vernal pool habitat will be restored by using existing soil from the site for upland creation. No pools will be created or enhanced in the western portion of the site due to unfavorable hydrology (i.e., the area stays ponded longer than typical vernal pools at Beale AFB.) In addition, no pools will be created at the southern portion of the site due to the slope of the site in that area.

Constructed pools will range between 6 and 14 inches in depth; the average depth will be eight inches. Upland mounds will average 8 to 12 inches in height, and will in no circumstances exceed 18 inches in height. A 6 to 12 foot wide drainage swale will be cut at the outlet of each created vernal pool. The swale will be cut 2 – 3” deep and at an elevation and location that will allow for sufficient ponding of water in the pool, while facilitating drainage of water into the next downslope wetland. Each subsequent pool will have a similar swale built, until the last pool in the complex is reached. A swale will then be built to establish a hydrologic connection between the complex of created vernal pools and the closest jurisdictional wetland. Each swale will be constructed with a motor grader or bulldozer. To establish jurisdictional connection between the new and existing wetlands, shallow swales will be created at the outfall of the constructed pools to guide water towards downslope pools or drainages. Construction of the habitat will occur in summer (during the dry season) to avoid issues with runoff or unintended impacts to soils.

During enhancement activities, the construction equipment will be working within existing wetlands. The wetlands were not habitat for listed crustaceans during species surveys in 2004-2005. Listed crustaceans were detected in 4 pools at the site. However, all construction equipment (except as noted below under inoculum collection) will stay at least 250 feet from 3 of the 4 vernal pools found to have listed *Branchinecta* cysts (pools 40, 105, and 95), as well as 2 hydrologically-connected pools (pools 94 and 95). Construction will occur approximately 130 feet from the 4th pool containing listed *Branchinecta* cysts (pool 131); however, because pool 131 is upslope of the proposed construction activities, it will not be affected by the construction.

At the completion of construction activities, soil inoculum will be collected from pools where listed *Branchinecta* cysts have been identified during dry-season surveys. To inoculate the constructed wetlands, two models of self-loading Earthwork scrapers (CAT 623 and CAT 613) will be used to collect soil material from donor vernal pools. The CATs will drop the collection bowl onto the soil at a desired depth (4” to 6”), thereby making an initial cut in the soil. They then will simultaneously collect and load the material into the bowl. No more than 50% of the surface area of any one pool will be disturbed.

Avoidance, Minimization and Conservation Measures for the Proposed Project

A qualified biologist will monitor all construction activities to ensure compliance with the avoidance, minimization, and compensation components of the proposed action. The biological

monitor will assist construction personnel in compliance with conservation measures and guidelines. The monitor will stop construction activities if needed to prevent damage to listed species and their habitats. Construction will be allowed to resume only after corrective actions have alleviated the potential for detrimental activities. The monitor will direct the placement of all stakes, flags, and barriers protecting sensitive resources.

The biological monitor will conduct environmental awareness training for construction crews before and during project implementation. The education program will briefly cover the threatened and endangered species, and their habitats, that may be encountered during construction or that may be within close proximity to the action area. Awareness training will cover all restrictions and guidelines that must be followed by construction crews to avoid or minimize impacts to threatened and endangered species and their habitat. Environmental awareness will be conducted prior to construction, when crews are about to enter potentially sensitive areas, and when new personnel join the construction crews.

Restrictions and guidelines to be observed by construction crews include the following:

- Construction activities will only be allowed between June 1 and November 1.
- All vehicle operators will observe the posted speed limit on paved roads and a 20-mile per hour speed limit on unpaved roads.
- Off-road travel by vehicles or construction equipment will be prohibited outside of designated work areas.
- No non-military firearms or pets will be allowed in the action area of the proposed project.
- Motor vehicles and equipment will only be fueled and serviced in designated staging areas.
- Any worker that inadvertently kills or injures a special status species, or finds one injured or trapped, will immediately report the incident to the biological monitor. The biological monitor will inform Environmental Flight (9 CES/CEV). The 9 CES/CEV will verbally notify the USFWS Sacramento Endangered Species Office within three days and will provide written notification of the incident within five days.

Prior to construction, existing vernal pools will be marked on construction drawings. In the field, the biological monitor will direct the installation of orange construction fencing or an equivalent visual barrier along the perimeter of the buffer surrounding the existing vernal pools and vernal swales on the project site in portions that have the potential to support vernal pool tadpole shrimp, vernal pool fairy shrimp, or their habitat). Staking and flagging will be completed before construction commences to ensure that construction vehicle, equipment, and personnel will not enter areas that have the potential to be occupied by the above special status species. The project proponent will remove all stakes and flagging within 60 days of project completion.

Threatened and endangered species habitat located adjacent to the construction area will be protected by placing orange barrier material or stakes and flagging around the perimeter of the buffer surrounding existing wetlands and existing vernal pools with the potential to support listed

vernal pool crustaceans. The location of these barriers will be clearly marked on construction plans and their placement will be supervised by the biological monitor.

All construction-staging activities will occur within the designated staging area. This site will be located no closer than 250 feet from any existing vernal pool, vernal swale, or other jurisdictional wetland, and will be marked in the field and on the construction plans. All refueling and maintenance activities will occur within the staging area. Any spill of hazardous materials will be cleaned up immediately, in accordance with all Federal, State, and local regulations.

Soil stockpile locations will be placed more than 50 feet from existing wetlands that are not designated for enhancement. Careful application of water to the stockpile soils will reduce the potential for air quality contamination by fugitive dust. Watering of other exposed soils related to construction activities will be necessary for dust control and soil compaction. Water application will be directed away from existing vernal pools to avoid triggering vernal pool species growth outside of the normal growing season.

Additional measures to minimize impacts to the site will be identified in the Storm Water Pollution Prevention Plan, which will be prepared and implemented prior to the initiation of construction. Erosion control Best Management Practices will be implemented as needed, including but not limited to: grading during the dry season, compaction of berms and upland spoils, and seeding and mulching areas of exposed soil.

Vernal pools will be constructed no closer than 50 feet from existing wetlands. In areas where jurisdictional wetlands need to be crossed in order to access work areas, temporary high-tensile strength geo-textile fabric, and portable aircraft runway mats will be secured to the bottom of the wetland for substrate protection.

History of Former Consultations at Beale AFB

The Service has completed fourteen formal section 7 consultations with Beale AFB (Service file numbers 1-1-95-F-019, 1-1-97-F-025, 1-1-97-F-029, 1-1-97-F-035, 1-1-97-F-092, 1-1-98-F-0164, 1-1-98-F-094 (which amended 1-1-98-F-0164), 1-1-99-F-0159, 1-1-00-F-0226 (which was amended by 1-1-01-F-0104), 1-1-01-F-0192, 1-1-03-F-0218, 1-1-04-F-0249, 1-1-04-F-0294, and 1-1-05-F-0165). These formal consultations addressed effects to federally listed vernal pool invertebrates and, to a lesser extent, the threatened valley elderberry longhorn beetle (*Desmocerus californica dimorphus*). As a result of these formal consultations involving federally listed vernal pool crustaceans, Beale AFB has agreed to provide both preservation and restoration of vernal pools within the conservation areas designated in the Conceptual Vernal Pool Management Plan (CVPMP). The current historical Beale AFB obligation of vernal pool preservation and restoration acreage is outlined in Table 1.

Historically, the Service has issued the biological opinions primarily to cover losses of vernal pool complexes and depressional seasonal wetlands that provide suitable habitat for federally-listed vernal pool crustaceans at Beale AFB. Beale AFB has committed to preservation of approximately 81.84 wetted vernal pool acres and restoration of 31.629 wetted vernal pool acres for proposed projects that have been subject to these biological opinions. Beale AFB completed Phase 1 of vernal pool restoration work in the Vernal Pool Restoration Area on the western side of Beale AFB. In 2001, a little over 16.24 wetted acres of vernal pools were restored to ecological signature in vernal pool restoration areas on the western side of Beale AFB.

Table 1. Vernal Pool Preservation and Restoration Compensation

Service Consultation Number	Preservation	Restoration	Total
95-F-019	paid TNC	paid Wildlands	none
97-F-025	0.054 acre	0.027 acre	0.081 acre
97-F-029	0.402 acre	0.016 acre	0.418 acre
97-F-035	0.068 acre	0.034 acre	0.102 acre
97-F-092	0.020 acre	0.010 acre	0.030 acre
98-F-0164	5.78 acres	4.34 acres	10.12 acres
99-F-0159	0.42 acre	0.21 acre	0.63 acre
00-F0226*	0.00 acre	2.88 acres	2.88 acres
01-F-0104	0.684 acre	0.342 acres	1.026 acres
01-F-0192	0.186 acres	0.093 acres	0.252 acres
03-F-0218	0.34 acres	0.04 acres	0.38 acres
04-F-0249	3.04 acres	0.52 acres	3.56 acres
04-F-0294**	60.98 acres	23.333	84.313
05-F-0165	2.77 acres	0.46	3.23
Total Acres:	74.744 acres	32.305 acres	107.049 acres

(*Well Fields Laterals, unauthorized fill, only)

** The Service and Beale AFB will re-evaluate the effects due to fence construction.

In a letter to the Corps dated September 14, 1998, the Service commented on the Draft CVPMP for the *Habitat Conservation and Management Plan (HCMP)*, Beale AFB, Yuba County, California. As stated in the September 14, 1998, letter and subsequent biological opinions issued by the Service to Beale AFB, the Air Force should preserve in perpetuity any vernal pool compensation acreage committed as a result of the completed consultations, regardless of whether the HCMP is finalized. In order to be in compliance with these previous biological opinions and this biological opinion, Beale AFB will need to commit to providing suitable occupied vernal pool crustacean habitat in perpetuity upon any future base disposal and reuse.

In 1998, Beale AFB developed a Base Comprehensive General Plan (General Plan) that outlined future development areas to support potential mission and workload expansion at Beale AFB. Implementation of the General Plan will result in the construction of facilities and other actions in areas presently classified as wildlife habitat. Some of these natural areas provide suitable habitat to support threatened and endangered vernal pool shrimp species. In March of 1999, Beale AFB developed a draft HCMP to provide compensation for adverse effects on natural resources associated with implementation of the General Plan. The *Draft Final Habitat Conservation and Management Plan* was finalized in April 2002 and serves as a management guide for identifying effects and developing compensation for the vernal pool fairy shrimp and vernal pool tadpole shrimp. The main purpose of the HCMP is to streamline the compliance process with the Act and Clean Water Act (CWA) for future projects, and it also provides a comprehensive multi-habitat and multi-species approach to natural resource conservation at Beale AFB. The HCMP serves as a biological assessment under Section 7 of the Act and provides part of the information needed to initiate consultation with the Service and National Oceanographic and Atmospheric Administration. Upon implementation of the HCMP, any action taking place in specified development areas will have pre-approved conservation measures for the proposed projects identified in the General Plan. Although the proposed projects in one or more biological opinions are not included in the General Plan, the proposed activities have similar intents and purposes to those of the General Plan, have similar effects to listed vernal pool crustaceans, and have the same compensation.

Implementation of the General Plan would result in the potential loss of up to 28.51 acres or more of existing seasonal wetland habitat for the vernal pool fairy shrimp and vernal pool tadpole shrimp. Subsequent wetland delineations may increase somewhat, but not significantly, the number of seasonal wetland features that may be occupied habitat for federally listed shrimp species. Adverse effects to other federally listed species have not been identified to date. The HCMP includes both seasonal wetland preservation and restoration components to compensate for adverse effects to federally-listed vernal pool invertebrates.

The Beale AFB *Integrated Natural Resources Management Plan, March 2005 to March 2009*, (INRMP) addresses natural resource management goals and objectives at the ecosystem level and was prepared in concert with the Base Comprehensive Plan, the Base General Plan, the HCMP, and the Cultural Resources Management Plan. Beale AFB prepared the INRMP to provide broad and specific management recommendations with goals to achieve some aspects of preserving,

improving, enhancing, and monitoring ecosystem integrity, species habitats, and wetlands while meeting the mission requirements of Beale AFB. In the past, Beale AFB has requested and received approval for exempting incidental take up to the amount of restoration extra credits that have resulted from the vernal pool restoration work that took place in 2001, however, emergency Homeland Security fence construction completed under BO # 1-1- 04-0294 may have resulted in effects that exceed the compensation completed to date. The Service and Beale AFB will develop a protocol to determine actual effects to vernal pool habitat as a result of the fence project. The Service is exempting incidental take under this biological opinion for only those activities described in this project description, and not any activities outlined in the General Plan, in concert with the INRMP, and/or those addressed in the HCMP.

The HCMP is intended to conserve and off-set adverse effects to natural resources associated with implementation of some activities in any of the 14 General Plan Developments Areas through preservation, restoration, and creation of sensitive species habitats. The HCMP identifies one riparian area, two vernal pool creation areas, one vernal pool restoration area, and three vernal pool preservation areas totaling over 2,200 acres of upland and aquatic habitat primarily on the west side of Beale AFB. The HCMP provides pre-conservation for any activities involving vernal pool resources in any of the development areas and limits the amounts of developments that can occur in three (the Golf Course, Munitions, and Flightline) of the 14 development areas. In June 2005, Beale AFB and the U. S. Army Corps of Engineers signed a thirteen point Memorandum of Agreement addressing the longterm conservation of vernal pool resources in the vernal pool conservation areas that are identified in the HCMP. Specifically regarding vernal pools, Beale AFB contains a total of 332.4 wetted acres of vernal pools that may support federally listed vernal pool crustaceans.

Status of the Species

Vernal pool fairy shrimp

A final rule was published on September 19, 1994 (Service 1994), to list the vernal pool fairy shrimp as threatened under the Act. The final rule to designate critical habitat for 15 vernal pool species, including the vernal pool fairy shrimp, was published on August 6, 2003 (Service 2003). The most recent final rule was published on February 10, 2006 (Service 2006a). Further information on the life history and ecology of the vernal pool fairy shrimp may be found in the final listing rule, the final rule to designate critical habitat, Eng *et al.* (1990), Helm (1998), and Simovich *et al.* (1992) and Volmar (2002). No critical habitat was designated within Beale AFB.

Vernal pool fairy shrimp inhabit alkaline pools, ephemeral drainages, rock outcrop pools, vernal pools, and vernal swales (Eriksen and Belk 1999; Helm 1998). Occupied habitats range in size from rock outcrop pools as small as one square meter to large vernal pools up to 12 acres; the potential ponding depth of occupied habitat ranges from 1.2 inches to 48 inches. The adults of the vernal pool fairy shrimp have been collected from early December to early May.

Vernal pool fairy shrimp have delicate elongate bodies; large, stalked, compound eyes; no hard shell (i.e., no carapace); and 11 pairs of swimming legs. Typically less than one inch long, they swim or glide gracefully upside-down by means of complex, wavelike beating movements while feeding on algae, bacteria, protozoa, rotifers, and detritus. Female vernal pool fairy shrimp carry eggs in a pear-shaped, ventral brood sac until the eggs are either dropped or sink to the pool bottom with the female when she dies. Eggs that remain after pools dry are known as cysts and are able to withstand heat, cold, and prolonged desiccation. When pools refill in the same or subsequent seasons, some, but not all, of the cysts hatch, resulting in a cyst bank in the soil that may include cysts from several breeding seasons (Donald 1983). Vernal pool fairy shrimp develop rapidly and may become sexually mature within two weeks after hatching (Gallagher 1996; Helm 1998). Such quick maturation permits vernal pool fairy shrimp populations to persist in short-lived, shallow bodies of water (Simovich *et al.* 1992).

All known occurrences of vernal pool fairy shrimp occur in California or southern Oregon. The geographic range of this species encompasses most of the Central Valley from Shasta County to Tulare County and the central coast range from northern Solano County to Santa Barbara County, California; additional disjunct occurrences have been identified in western Riverside County, California, and in Jackson County, Oregon near the city of Medford (CNDDDB 2006; Helm 1998; Eriksen and Belk 1999; Volmar 2002; Service 1994, 2003).

Vernal pool crustaceans have passive dispersal. Birds, such as waterfowl, and grazing animals are likely dispersal agents for vernal pool tadpole shrimp (Simovich *et al.* 1992). The eggs of these crustaceans are either ingested (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers upon which they are transported to new habitats.

Vernal Pool Tadpole Shrimp

A final rule was published on September 19, 1994 (Service 1994), to list the vernal pool tadpole shrimp as endangered under the Act. The final rule to designate critical habitat for 15 vernal pool species, including the vernal pool tadpole shrimp, was published on August 6, 2003 (Service 2003). The most recent final rule was published on February 10, 2006 (Service 2006a). Further information on the life history and ecology of the vernal pool tadpole shrimp may be found in the final listing rule, the final rule to designate critical habitat, Eng *et al.* (1990), Helm (1998), Simovich *et al.* (1992), and Volmar (2002). No critical habitat was designated within Beale AFB.

Vernal pool tadpole shrimp inhabit alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands (Helm 1998). Occupied habitats range in size from vernal pools as small as two square meters to large vernal lakes up to 89 acres; the potential ponding depth of occupied habitat ranges from 1.5 inches to 59 inches. Pools may be clear or turbid. Vernal pool tadpole shrimp have large, shield-like carapaces approximately one inch long that covers most of their body; dorsal, compound eyes; and a pair of long cercopods, one on each side

of a flat caudal plate, at the end of their last abdominal segment. Vernal pool tadpole shrimp are primarily bottom-dwelling animals that move with legs down while feeding on detritus and living organisms, including fairy shrimp and other invertebrates (Pennak 1989). Females deposit cysts (partially developed embryos encased in an egg-like structure) which settle on the pool bottom. Although some cysts may hatch quickly, others remain dormant to hatch during later rainy seasons (Ahl 1991). Tadpole shrimp may become sexually mature within three to four weeks after hatching (Ahl 1991; Helm 1998). Reproductively mature adults may be present in pools until the habitats dry up in the spring (Ahl 1991; Gallagher 1996; Simovich *et al.* 1992).

The vernal pool tadpole shrimp is known from 19 populations in the Central Valley, ranging from east of Redding in Shasta County south to Fresno County, and from a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in Alameda County. The pools are located most commonly in grass-bottomed swales of grasslands in old alluvial soils underlain by hardpan or in mud-bottomed claypan pools containing highly turbid water.

Vernal pool crustaceans have passive dispersal. Birds, such as waterfowl, and grazing animals are likely dispersal agents for vernal pool tadpole shrimp (Simovich *et al.* 1992). The eggs of these crustaceans are either ingested (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers upon which they are transported to new habitats.

Environmental Baseline

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated effects of all proposed Federal projects in the action area that have undergone section 7 consultation and the effects of State and private actions that are contemporaneous with the consultation in progress.

The vernal pool fairy shrimp and vernal pool tadpole shrimp are imperiled by habitat loss caused by a variety of human-caused activities, primarily urban development, water supply/flood control projects, and conversion of land to agricultural use. Only small proportions of the habitats of these crustaceans are protected from these threats. State and local laws and regulations have not been adequate to protect the listed vernal pool crustaceans. Other regulatory mechanisms necessary for the conservation of the habitat of the vernal pool fairy shrimp and the vernal pool tadpole shrimp have proven ineffective.

Holland (1978) estimated that between 60 and 85 percent of the habitat that once supported vernal pools, habitat of the vernal pool fairy shrimp and vernal pool tadpole shrimp, had been destroyed by 1973. In the ensuing 25 years, a substantial amount of the remaining habitat has been converted for human uses. The rate of loss of vernal pool habitat in the state has been estimated at 2 to 3 percent per year (Holland and Jain 1988). Rapid urbanization of the Central Valley of California currently poses the most severe threat to the continued existence of the

vernal pool fairy shrimp. The vernal pools under the jurisdiction of the Sacramento District of the U.S. Army Corps of Engineers include most of the known populations of the vernal pool fairy shrimp and the vernal pool tadpole shrimp (Coe 1988). Coe (1988) estimated that within 20 years, 60 to 70 percent of the habitat would be destroyed by human activities.

The habitat of the listed vernal pool crustaceans is highly fragmented throughout their ranges due to conversion of natural habitat for urban and agricultural uses. This fragmentation results in small isolated vernal pool fairy shrimp and vernal pool tadpole shrimp populations. Ecological theory predicts that such populations will be highly susceptible to extinction due to chance events, inbreeding depression, or additional environmental disturbance (Gilpin and Soule 1986; Goodman 1987a, b). Should an extinction event occur in a population that has been fragmented, the opportunities for re-colonization are thought to be greatly reduced due to geographical isolation from other source populations.

The ephemeral wetlands that support this network of occurrences are remnants of formerly pristine vernal pool ecosystems that have been converted primarily to agricultural and urban uses.

The highly disturbed remnant habitat is generally not protected and the existing populations of the listed vernal pool crustaceans are imperiled by numerous human activities. These activities include excavations and maintenance procedures that alter local hydrological conditions, conversion of grasslands to vineyards, and activities that result in the introduction of toxic substances (*e.g.*, pesticides and spills, illegal dumping of hazardous materials).

Yuba County contains occurrences of both the vernal pool tadpole shrimp and vernal pool fairy shrimp. Vernal pools on Beale AFB are Northern Hardpan Vernal Pools and occur predominantly in the western central and southern portions of the base (Sawyer and Keeler-Wolf 1995). In a 1996 study of vernal pools occurring on five geomorphic soil-types that occur on Beale AFB, vernal pool tadpole shrimp adults were found in vernal pools on Riverbank and two vernal pools on Modesto soil types. Active vernal pool fairy shrimp were found in vernal pools on Laguna, Modesto, and Riverbank soil types. Vernal pool depth had a positive effect and vernal pool surface area had a negative effect on the frequency of active vernal pool fairy shrimp (California Native Plant Society 1996).

Beale AFB has identified and established three vernal pool preservation areas, one vernal pool restoration area, and two vernal pool construction areas to compensate for losses of, and adverse effects to, the vernal pool tadpole shrimp and vernal pool fairy shrimp. On Beale AFB, dry season vernal pool sampling for federally-listed branchiopod cysts was conducted in 1,000 randomly selected vernal pools in 1995, and revealed that cysts of both vernal pool crustaceans were present. Wet season sampling was conducted in the same 1,000 vernal pools in 1996; vernal pool fairy shrimp were found in 134 pools and vernal pool tadpole shrimp were discovered in 29 pools (Jones and Stokes 1998b).

Changes in existing vernal pool habitat, along with project-specific compensation, are listed above under the subheading: History of Former Consultations at Beale AFB.

In addition, lands between Beale AFB and the towns of Linda and Olivehurst are undergoing rapid development. These developments and others within the region, have resulted in both direct and indirect effects to vernal pools, and have contributed to the decline in vernal pool fairy shrimp and vernal pool tadpole shrimp. Portions of the privately-owned lands have vernal pools present, although the extent of suitable habitat for listed crustaceans is not fully known. Private lands to the west and southwest of the base have been used historically for various forms of agriculture, including extensive holdings contoured for rice farming. Lands to the north of the base (between Beale AFB and the Yuba River) were subject to historical dredging activities and current aggregate mining. There have been few known surveys for vernal pool crustaceans outside of Beale AFB lands; therefore, the extent to which vernal pool habitat has been altered by agriculture and mining activities in the surrounding area appears to be largely unknown. Within the proposed project site, the Air Force has completed both wet and dry-season protocol-level surveys; no listed crustaceans were found during wet-season sampling. Vernal pool fairy shrimp cysts were identified from four degraded vernal pools on the project site.

Effects of the Action

The proposed project will result in temporary effects to a maximum of 3.0 acres of wetted vernal pool habitat for the two federally-listed vernal pool crustaceans. The effects of the project are due to inoculum collection from up to seven existing vernal pool. Collection of soil for donor inoculum may destroy up to 3.00 acres of vernal pool soils that contain cysts of vernal pool crustaceans. However, not all the cysts in these collected soils will be destroyed by the collection, transport, and spreading of the vernal pool soil inoculum. Because construction activities will be limited to the dry season, it is anticipated that adverse effects to the species will be limited to the direct effects of inoculum collection in existing vernal pools. Beale AFB proposes that the project will have a beneficial effect on the two listed crustaceans, as four of the existing vernal pools are very shallow and believed to be degraded; although vernal pool fairy shrimp cysts were present in soils, not active shrimp were sampled during the wet-season surveys. It is possible that conditions no longer provide appropriate hatching conditions. Removal of inoculum soils from these pools will allow its use in other pools that would more likely sustain the shrimp. In addition, soil removal from the degraded pools will increase their depth and promote conditions suitable for active vernal pool fairy shrimp. The additional three pools are deeper pools that have vernal pool tadpole shrimp cysts present. Inoculum from the three deeper pools will be added only to the deeper pools to be created.

As stated in the November 1998 *Final Conceptual Vernal Pool Restoration and Monitoring Plan*, Beale AFB proposes to compensate all vernal pool effects within the Beale General Plan development area through preservation at a minimum target ratio of 2.0:1 and restoration/creation at a 1.0:1 ratio. Implementation of the General Plan and Phase 2 of the CVPRM plan that would provide restored vernal pool habitat that is preserved and managed in perpetuity in those compensation areas would meet the conservation needs of the species.

Beneficial effects from the proposed vernal pool Site 2 restoration project include providing suitable habitat for both the vernal pool tadpole shrimp and vernal pool fairy shrimp. The beneficial effects would be derived from deepening the four “donor-smeared” vernal pool areas that are proximate to the pools being restored. This deepening of the four “smeared” vernal pools could improve the suitability and the quality of the four existing pools for the two federally listed vernal pool crustaceans. In addition, colonization of 14.62 acres of created and restored vernal pools by the vernal pool fairy shrimp and the vernal pool tadpole shrimp may be accelerated by inoculation of the newly-created vernal pools.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act. The Service anticipates that a range of activities at Beale AFB will affect the vernal pool tadpole shrimp and the vernal pool fairy shrimp. Such activities may include, but are not limited to, flood control, roadway and utility projects, use of chemical products that may result in non-target contamination, as well as expansion of on-base facilities for military or military-related activities. We anticipate that most, if not all, of these activities at Beale AFB will be funded or carried out by the Air Force, and will be subject to required consultation under Section 7.

Conclusion

After reviewing the current status of the listed vernal pool crustaceans, the environmental baseline for the action area, the effects of the proposed actions and the cumulative effects, it is the Service's biological opinion that the proposed actions are not likely to jeopardize the continued existence of the vernal pool fairy shrimp or vernal pool tadpole shrimp. The Service reached this conclusion because the project-related effects to these species would be not rise to the level of precluding recovery of either species or reducing the likelihood of survival of the species. Additionally, the proposed conservation measures would offset the adverse effects from the proposed actions through habitat restoration. Currently, no critical habitat has been designated for vernal pool fairy shrimp and vernal pool tadpole shrimp in the action area; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulations issued pursuant to section 4(d) of the Act, prohibit take of endangered and threatened species without a special exemption. Take is defined as

harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an action that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), such incidental taking is not considered to be a prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary and must be implemented by the Air Force, as appropriate, in order for the exemption in section 7(o)(2) to apply. Beale AFB has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Air Force fails to comply with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates incidental take of the listed vernal pool crustaceans will be difficult to detect for the following reasons: (1) these species have small body size, therefore finding a dead or injured specimen is unlikely; (2) these species occur in habitats that makes detection difficult; and (3) losses may be masked by seasonal and annual fluctuations in numbers, chance events, changes in water regime, or additional environmental disturbance. Due to the difficulties in quantifying the number of individuals that will be taken as a result of the proposed action, the Service is quantifying take incidental to this project as the number of acres of suitable habitat for the listed crustacean species that will become less suitable for this species as a result of the action. The Service estimates that all vernal pool fairy shrimp and all vernal tadpole shrimp inhabiting up to 3.0 wetted acres of vernal pool habitat could be directly lost due to inoculum collection for the proposed project.

Upon implementation of the following reasonable and prudent measures, up to 3.00 wetted acres of suitable branchiopod habitat may be disturbed and take may occur as a result of the harvesting and spreading of vernal pool soil inoculum during completion of the Site 2 restoration project. However, we do not anticipate that all the cysts will be destroyed during collection, transport, and spreading of vernal pool soil inoculum. The listed vernal pool crustaceans as cysts may be harmed, harassed, killed, or injured in association with the project-related activities that are exempted under Section 9 of the Act. This biological opinion does not authorize any take other than that described for the proposed project covered in this biological opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take of up to 3.00 wetted acres of suitable vernal pool crustacean habitat is not likely to result in jeopardy to the vernal pool fairy shrimp or the vernal pool tadpole shrimp.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the impact of taking vernal pool crustaceans:

1. Minimize direct and indirect effects to the vernal pool tadpole shrimp and vernal pool fairy shrimp during project construction.
2. The effects of habitat loss to the two federally-listed vernal pool crustaceans shall be minimized through preservation of natural vernal pools and restoration of vernal pools that will contribute to the conservation of the species.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, Beale AFB must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary:

1. The following terms and conditions implement reasonable and prudent measure number one (1):
 - A. Beale AFB shall minimize the potential for take of the vernal pool fairy shrimp and the vernal pool tadpole shrimp from project-related activities by implementation of the conservation measures as described in the biological assessment and the project description of this biological opinion. However, the terms and conditions of this biological opinion will take precedence over Air Force Plans in instances where the actions in the terms and conditions exceed those in the Plans as noted in the Project Description.
 - B. If Beale AFB utilizes an outside contractor to implement the proposed project, Beale AFB shall include a copy of this biological opinion within its solicitations and contracts for construction on the project, thus making the prime contractor responsible for implementing all requirements and obligations included in this biological opinion. Beale AFB shall educate and inform all other contractors involved in the proposed project as to the requirements of the biological opinion.

- C. High visibility fencing that is at least 1.5 meters (5 feet) in height shall be placed and maintained around any avoided vernal pool habitat to prevent vehicle entry during project construction. A 250 foot buffer will be maintained between all re-contouring (construction) activities and existing habitat for vernal pool crustaceans unless the habitat is upslope of the activity, in which case a buffer of 100 feet will be maintained. Soil stockpiles will be placed at least 50 feet from other existing wetlands.
- D. All garbage and construction-related materials in construction areas shall be removed immediately following project completion.
- E. Beale AFB shall implement Best Management Practices (BMPs) to prevent sediment from entering the avoided vernal pools that will not be permanently destroyed at the project site, including, but not limited to, the use of silt fencing, hay bales, and standard procedures for temporary sediment disposal.
- F. A qualified biologist shall be on-site or on-call during all activities that could result in the take of the vernal pool fairy shrimp and the vernal pool tadpole shrimp. The qualifications of the biologist must be provided to the Service for review and approval prior to any ground-breaking at the project site. The biologist must be given the authority to stop any work that may result in take of federally-protected vernal pool crustaceans. If the biologist exercises this authority, the Service and the California Department of Fish and Game (CDFG) must be notified by telephone and letter within one (1) working day.
- G. A worker training program on the vernal pool fairy shrimp and vernal pool tadpole shrimp shall be conducted for construction personnel before groundbreaking at the proposed project. The program shall provide workers with 1) information on their responsibilities with regard to listed vernal pool species, 2) an overview of the life-history of the species, and 3) a description of the measures being taken to reduce effects to these species during project construction. The Air Force shall submit proof of the training to the Chief of the Endangered Species Division (Central Valley), Sacramento Fish and Wildlife Office (SFWO), 2800 Cottage Way, Room W-2605, Sacramento, California, 95825-1846.
- H. If pesticides and herbicides are used at the proposed project site, the Air Force shall ensure that label restrictions, and other restrictions mandated by the U.S. Environmental Protection Agency and California Department of Food and Agriculture are observed. The Air Force shall contact the appropriate agencies for any additional project-related recommendations by the Service or the California Department of Fish and Game.

- I. Motor vehicles and equipment will only be fueled and serviced in the designated construction staging area located on an existing gravel pad, as shown on the Corps Site 2 Grading Plan (8/30/04), or other Service-approved staging sites.
 - J. Before inoculum-collection activities are initiated, Beale AFB personnel will confer with the Service to determine the need to collect vernal pool tadpole shrimp inoculum, and the extent of authorized collections from the three identified vernal pools with vernal pool tadpole shrimp present.
 - K. Upon completion of the project, all vernal pool fairy shrimp and vernal pool tadpole shrimp habitat subject to temporary ground disturbances, including storage and staging areas, etc. shall be re-contoured to original contours, and be allowed to revegetate to promote restoration of the area to its original conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that, after project completion, will not be subject to further disturbance and has the potential to revegetate.
 - L. If requested, during or upon completion of construction activities, the on-site biologist, or a representative from Beale AFB shall accompany Service personnel on an on-site inspection of the site to review project effects to the vernal pool fairy shrimp and the vernal pool tadpole shrimp, and their habitats.
2. The following terms and conditions implement reasonable and prudent measure number two (2):
- A. As described on page 5-4 of the biological assessment, the direct effects to vernal pool crustacean habitat resulting from the proposed project shall be minimized through vernal pool preservation at a 2.0:1 ratio. No less than 6.00 wetted acres of vernal pools shall be preserved within the CVPRM areas to compensate for temporary effects due to the proposed project work. The preserved vernal pools and their surrounding watershed shall be protected as vernal pool habitat, managed for the benefit of listed vernal pool crustaceans, and preserved in perpetuity from future development.
 - B. Vernal pool habitat will be created or restored at a density of 15% or less of wetted vernal pool acres to total project acres. The side-slopes of constructed pools will vary between 3:1 and 5:1 (or greater) as appropriate to match naturally-occurring pools within the area. The slopes of the pool bottoms should vary from approximately 0.25% to 2.0%, depending on the site characteristics. Pool bottoms will be 3 to 12 inches above a slowly-permeable or impermeable soil horizon.
 - C. Beale AFB shall report to the Service the completion of the vernal pool restoration and creation portions of the proposed project, as they are completed.

- D. No pets will be allowed in the proposed action area.
- E. If Beale AFB would ever vacate or transfer title to any part of the lands set aside as vernal pool preservation or restoration/creation, the Air Force shall assure provisions are in place, prior to vacating or transferring title, for the protection of the vernal pool tadpole shrimp and vernal pool fairy shrimp and their habitat in perpetuity.

CONSERVATION RECOMMENDATIONS

Section 7(a) (1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of informational databases.

1. The Air Force should implement conservation measures, assist or fund any research, or allow access for research on Beale AFB that promotes the recovery of listed vernal pool crustaceans or their habitats.
2. The Air Force should provide educational opportunities addressing the value and importance of maintaining healthy ecosystems, including vernal pool habitat to local school districts, interested groups, or individuals.
3. The Air Force should work with the Service to develop a programmatic opinion that will address the Beale AFB development and operations while providing for the conservation of listed species.
4. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

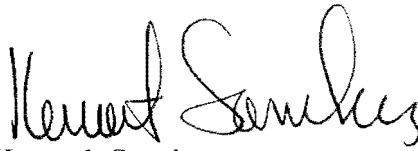
REINITIATION NOTICE

This concludes formal consultation on the proposed projects. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if; (1) the amount or extent of incidental take is exceeded, (2) new information reveal effects of the proposed action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to listed species

or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Karen Leyse or Holly Herod, Sacramento Valley Branch Chief at (916) 414-6645.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth Sanchez". The signature is fluid and cursive, with the first name "Kenneth" written in a larger, more prominent script than the last name "Sanchez".

Kenneth Sanchez
Acting Field Supervisor

cc:

Beale AFB (Attn Kirsten Chritopherson)

California Department of Fish and Game (Attn: Jeff Finn and Dale Whitmore)

State Water Resources Control Board (Attn: Gary Carlton)

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